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1989

EPA Superfund
Record of Decision:

CELANESE CORP. (SHELBY FIBER OPERATIONS)
EPA ID: NCD003446721
OU 02
SHELBY, NC
03/28/1989

FORMER GLYCOL RECOVERY

UNIT WASTE PITS AND OTHER SCATTERED DISPOSAL PITS, AND GROUNDWATER CONTAMINATED BY THE WASTE IN THOSE PITS. DUE TO THE GROUNDWATER CONTAMINATION AND THE POTENTIAL FOR IT TO MOVE OFF-SITE, EPA APPROVED S&ME'S PROPOSAL FOR A TWO-PHASED CLEAN-UP ACTION. THESE TWO PHASES ARE IDENTIFIED AS OPERABLE UNIT ONE (OU #1), WHICH FOCUSES ON THE CONTAMINATED, AND OPERABLE UNIT TWO (OU #2), WHICH FOCUSES ON THE SLUDGES AND SOILS ASSOCIATED WITH THE FORMER GLYCOL RECOVERY UNIT TRENCHES AND BURN PIT AREAS.

THE OPERABLE UNIT FS FOR THE FIRST OPERABLE UNIT, THE GROUNDWATER REMEDIATION, WAS COMPLETED IN FEBRUARY OF 1988. THE ROD FOR THE REMEDIAL ACTION (OU #1) WAS SIGNED MARCH 23, 1988, AND REQUIRED EXTRACTION AND TREATMENT OF CONTAMINATED GROUNDWATER ASSOCIATED WITH THE SITE. THE POTENTIALLY RESPONSIBLE PARTY, HOECHST CELANESE, AGREED TO CONDUCT THE REMEDIAL ACTION FOR OU #1 IN A PARTIAL CONSENT DECREE JUNE 30, 1988. IT HAS SINCE BEEN ENTERED WITH THE COURT.

THE OPERABLE UNIT FS OF OU #2 REMEDIAL ACTION WAS FINAL IN FEBRUARY 1989. THIS REMEDIAL ACTION WILL ADDRESS CONTAMINANT SOURCE CONTROL AT THE SITE.

A SPECIAL NOTICE LETTER FOR OPERABLE UNIT TWO (OU #2) WAS ISSUED BY THE AGENCY AND RECEIVED BY HOECHST CELANESE ON FEBRUARY 15, 1989. NEGOTIATIONS ARE ON-GOING.

3.0 COMMUNITY RELATIONS HISTORY

TWO INFORMATION REPOSITORIES HAVE BEEN ESTABLISHED FOR THE SITE: ONE IN EARL, NORTH CAROLINA, AN ONE IN SHELBY. INFORMATION IS ALSO AVAILABLE IN ATLANTA, GEORGIA, IN THE EPA REGION IV REGIONAL OFFICE. FACT SHEETS AND PRESS ADVISORIES WERE PREPARED PRIOR TO EACH PUBLIC MEETING. PRIOR TO BOTH FEASIBILITY STUDY PUBLIC MEETINGS, PUBLIC NOTICES RAN IN LOCAL NEWSPAPERS.

A PUBLIC MEETING WAS HELD ON SEPTEMBER 24, 1985 TO PRESENT THE DRAFT RI/FS WORK PLAN TO INTERESTED PARTIES. A COMMUNITY RELATIONS PLAN IDENTIFYING A POSITIVE PUBLIC OUTREACH STRATEGY WAS DEVELOPED BY REGION IV PERSONNEL IN OCTOBER 1985. A PUBLIC MEETING WAS HELD ON JULY 21, 1986 TO PRESENT THE FINDINGS OF THE RI TO INTERESTED CITIZENS. ON FEBRUARY 3, 1988, A PUBLIC MEETING WAS HELD ON THE PROPOSED PLAN AND FS FOR OPERABLE UNIT ONE. THIS PUBLIC MEETING OPENED THE 21 DAY PUBLIC COMMENT PERIOD FOR THE OPERABLE UNIT ONE FEASIBILITY STUDY AND PROPOSED PLAN.

NUMEROUS QUESTIONS WERE ASKED AT THE MEETING AND A NUMBER OF COMMENTS WERE RECEIVED. FEW COMMENTS WERE ON THE SELECTED ALTERNATIVE. THE MAJORITY OF THE COMMENTS RECEIVED WERE ACTUALLY REQUESTS TO HAVE PRIVATE WELLS SAMPLED. THESE REQUESTS WERE HANDLED BY THE CLEVELAND COUNTY HEALTH DEPARTMENT IN CONCERT WITH THE NORTH CAROLINA DEPARTMENT OF HUMAN SERVICES. THE PUBLIC SHOWED A DESIRE FOR REMEDIATION OF THE SITE.

TWO AVAILABILITY SESSIONS WERE HELD ON AUGUST 18, 1988 TO PRESENT THE REMEDIAL DESIGN REPORT TO THE PUBLIC AND TO ALLOW THEM TO GET INFORMATION ON A ONE ON ONE BASIS. THE COUNTY COMMISSION WAS BRIEFED PRIOR TO THE SESSIONS.

ON FEBRUARY 16, 1989, A PUBLIC MEETING WAS HELD ON THE PROPOSED PLAN FOR OPERABLE UNIT TWO, AND TO PRESENT THE OPERABLE UNIT TWO FEASIBILITY STUDY TO INTERESTED CITIZENS. THIS MEETING OPENED THE 21 DAY PUBLIC COMMENT PERIOD ON THE PROPOSED PLAN AND DRAFT FS.

A RESPONSIVENESS SUMMARY WAS PREPARED TO SUMMARIZE COMMUNITY CONCERNS AND EPA'S COMMUNITY RELATIONS ACTIVITIES FOR THE RODS ASSOCIATED WITH EACH OPERABLE UNIT.

4.0 SCOPE AND ROLE OF OPERABLE UNIT OR RESPONSE ACTION IN SITE STRATEGY

THIS REMEDIAL ACTION (OU #2) WILL ADDRESS A PRINCIPAL THREAT AT THE SITE POSED BY CONTAMINANT MASS AND CONTAMINATED SOILS REMAINING ON-SITE. THE PRINCIPAL THREAT AT THE SITE FROM SUBSEQUENT GROUNDWATER CONTAMINATION WAS ADDRESSED PREVIOUSLY BY OU #1. THE PRINCIPAL THREAT OF FUTURE CONTAMINATION OF GROUNDWATER IS ADDRESSED BY OU #2, THE SOURCE REMEDIATION. THEREFORE, THIS OPERABLE UNIT (OU #2) IS EXPECTED TO BE THE FINAL REMEDIAL ACTION FOR THE SITE.

5.0 SUMMARY OF SITE CHARACTERISTICS

CHEMICAL ANALYSES WERE PERFORMED ON SOIL, GROUNDWATER, SURFACE WATER, AND SEDIMENT SAMPLES COLLECTED AT THE SITE DURING THE RI. THESE ANALYSIS DOCUMENTED THE PRESENCE OF VARIOUS GROUPS OF COMPOUNDS INCLUDING PHTHALATES, PHENOLS, POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS), OTHER SEMI-VOLATILE, ORGANICS AND METALS.

THE RI INCLUDED THE COLLECTION OF SOILS SAMPLES FROM TEST BORINGS, WELL BORINGS AND TEST PILES. THESE SAMPLES WERE COLLECTED FROM AREAS SUSPECTED OF CONTAINING THE CONTAMINANT SOURCES (DISPOSAL FILL AREA), UPGRADIENT (BACKGROUND AREA) AND DOWNGRADIENT AREAS.

THE WESTERN TERRACE OF THE LAWN AREA ADJACENT TO THE WASTEWATER TREATMENT PLANT ENCOMPASSES THE GRU DISPOSAL PITS AND FORMER BURN PITS. THIS AREA IS THOUGHT TO BE THE PRIMARY SOURCE OF CONTAMINATION BEING RELEASED TO GROUNDWATER AND SURFACE WATER SYSTEMS. THE GENERAL LOCATION OF THE DISPOSAL FACILITIES ARE SHOWN ON FIGURE 5-1 AS INTERPRETED FROM HISTORIC AERIAL PHOTOGRAPHS. CHEMICAL ANALYSIS OF SOIL/WASTE SAMPLES COLLECTED IN THIS AREA DOCUMENTED THE PRESENCE OF PHTHALATES, BENZENE AND OTHER NON-PHENOLIC AROMATIC COMPOUNDS, PAHS, PHENOL, KETONE COMPOUNDS AND DIBENZOFURAN. FIGURE 5-2 IS A MAP OF THE
WESTERN TERRACE OF THE LAWN AREA AND WASTEWATER TREATMENT PLANT SHOWING THE LOCATION OF EXPLORATORY TEST PITS AND TEST BORINGS.

THE SOIL GEOCHEMICAL DATA GATHERED DURING THE RI AND PRESENTED ON THE CROSS-SECTIONS INDICATE THAT SOIL CONTAMINATION OF VARIOUS DEGREES EXTENDS TO DEPTHS IN EXCESS OF 30 FEET BELOW LAND SURFACE IN THE PROBABLE SOURCE AREA. WASTE VOLUMES WERE ESTIMATED FOR THE GRU SLUDGES AND BURN PIT WASTES BASED ON THE VISUAL DESCRIPTION OF MATERIALS ENCOUNTERED IN TEST PITS AND SOIL BORINGS, AND THE ESTIMATED SIZES OF THE PITS FROM THE AERIAL PHOTOGRAPHS. THESE CALCULATIONS AND THE RESULTS OF THE EXPANDED CHARACTERIZATION STUDY ESTIMATE THAT ABOUT 3,6000 CUBIC YARDS OF GRU SLUDGE AND BURN PIT MATERIALS ARE BURIED IN THE LAWN AREA.

ANALYSIS OF STREAM SEDIMENTS SHOWED GENERALLY SIMILAR COMPOUND CLASSES TO THOSE PRESENT IN THE FILL AREAS BUT AT LOWER CONCENTRATIONS. THE PHTHALATE GROUP GENERALLY PREDOMINATED; HOWEVER, THE LOCATION SHOWING THE HIGHEST ORGANIC LOADING ALSO SHOWED PAHS. THE HIGHER CONCENTRATIONS OF COMPOUNDS WERE GENERALLY ON THE PERIMETER STREAMS TO THE NORTH OF THE WASTEWATER TREATMENT PLANT. THESE AREAS WERE POSSIBLY SUBJECT TO DIRECT OVERLAND FLOW OF WASTE OR CONTAMINATED LIQUID DURING THE EARLY PLANT OPERATION, MAY CURRENTLY RECEIVE SOME EROSIONAL LOADING FROM THE FILL AREAS, AND DO RECEIVE STORM WATER RUNOFF FORM THE PLANT PRODUCTION AEA. FIGURE 5-3 SHOWS THE STREAM SEDIMENT SAMPLING POINTS AND THE CONCENTRATIONS OF TOTAL HSL ORGANICS MEASURED DURING THE RI SAMPLING.

THE TOTAL VOLUME IN CUBIC YARDS (CY) OF MATERIALS IN THE SOURCE AREA IS ESTIMATED TO BE:

PLASTIC

GRU BURN PIT MATERIAL CHIPS & SOLIDS TOTAL 1800 CY 1200 CY 600 CY 3600 CY

THESE VALUES INCLUDE A 20% ALLOWANCE TO ACCOUNT FOR SOIL REMOVED WHILE EXCAVATING THESE MATERIALS.

SOIL BELOW THE GRU AND BURN PIT MATERIALS HAVE PROBABLY BEEN CONTAMINATED BY PERCOLATION OF PRECIPITATION THROUGH THESE WASTE MATERIALS. SOME OF THE SOIL WOULD BE EXCAVATED AND REMEDIATED ALONG WITH THE SOURCE MATERIAL. HOWEVER, SOME CONTAMINATION WILL BE LEFT IN PLACE BECAUSE OF ITS DEPTH, AND DIFFICULTIES ASSOCIATED WITH EXCAVATING IT. THE CONTAMINATED MATERIAL TEND TO LIQUIFY WHEN EXPOSED TO FRICTION, WHICH COMPLICATES DEEP EXCAVATION. IT IS ANTICIPATED THAT THE RESIDUAL CONTAMINATION WILL BE REMOVED BY THE INNER TIER GROUNDWATER EXTRACTION SYSTEM AFTER IT HAS BEEN LEACHED TO THE WATER TABLE DUE TO THE HIGH SOLUBILITY OF CONTAMINANTS IN WATER.

6.0 DISCUSSION OF CLEANUP CRITERIA (ARARS)

THE REQUIREMENTS IN CERCLA SPECIFY THAT REMEDIAL ACTIONS COMPLY WITH APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS). APPLICABLE REQUIREMENTS MEAN THOSE CLEANUP STANDARDS OR

ENVIRONMENTAL PROTECTION REQUIREMENTS PROMULGATED UNDER FEDERAL OR STATE LAW THAT SPECIFICALLY ADDRESS A HAZARDOUS SUBSTANCE, POLLUTANT OR REMEDIAL ACTION AT A CERCLA SITE. RELEVANT AND APPROPRIATE REQUIREMENTS MEANS THOSE CLEANUP STANDARDS OF OTHER ENVIRONMENTAL PROTECTION REQUIREMENTS PROMULGATED UNDER FEDERAL OR STATE LAW WHILE NOT "APPLICABLE" TO A HAZARDOUS SUBSTANCE, POLLUTANT OR REMEDIAL ACTION AT A CERCLA SITE ADDRESS PROBLEMS OR SITUATIONS SIMILAR TO THOSE ENCOUNTERED AT A CERCLA SITE.

NO ARARS HAVE BEEN ESTABLISHED FOR SOILS. EP TOXICITY TESTING REPORTED IN THE RI INDICATED THAT REPRESENTATIVE SITE SOILS AND SLUDGES FROM THE BASE OF THE EMERGENCY PONDS DID NOT LEACH METALS ABOVE THE THRESHOLD VALUE THAT WOULD CLASSIFY THEM AS HAZARDOUS AND A POTENTIAL METALS CONTAMINATION SOURCE. HOWEVER, THE RI ANALYSES DID IDENTIFY A VARIETY OF ORGANIC COMPOUNDS IN BOTH THE SOIL/WASTE AND GROUNDWATER, DOCUMENTING THE LEACHABILITY OF SOME ORGANICS.

7.0 SUMMARY OF SITE RISKS

A SUITE OF INDICATOR PARAMETERS WAS CHOSEN, ACCORDING TO THE FORTH IN THE SUPERFUND PUBLIC HEALTH EVALUATION MANUAL (EPA, 1986), FOR TOXOLOGICAL INTERPRETATION AND REVIEW PURPOSES. GENERALLY, THIS PROCESS DIRECTS THE SELECTION OF CHEMICALS WHICH BEST REPRESENT THE HAZARDS ASSOCIATED WITH THE SITE BASED ON CONCENTRATION IN THE ENVIRONMENTAL MEDIUM OF CONCERN AND A RELATIVE TOXICITY CONSTANT. APPLICATION OF THIS PROCESS RESULTED IN THE SELECTION OF BENZENE, TRICHLOROETHYLENE (TCE) BIS(2-ETHYLHEXYL) PHTHALATE, LED, AND CHROMIUM AS THE INDICATOR CHEMICALS. THESE WERE DEVELOPED BY CONSIDERING THE PRIMARY ROUTE OF EXPOSURE THROUGH INGESTION OF GROUNDWATER.

SEVERAL ASSUMPTIONS WERE MADE IN PERFORMING THE HEALTH EVALUATION. IT WAS ASSUMED THAT CHEMICALS PRESENT AT THE SITE COULD BE TRANSPORTED OFF-SITE IN GROUNDWATER AND BE CONSUMED BY PERSONS WITHIN A 1-MILE RADIUS OF THE SITE. FURTHER, IT WAS ASSUMED THAT OFF-SITE GROUNDWATER CONCENTRATIONS OF INDICATOR CHEMICALS WOULD EQUAL THE MEAN CONCENTRATIONS PRESENT AT THE SITE.

A COMPARISON OF THE TOTAL DAILY INDICATOR CHEMICAL INTAKES FOR AN ADULT AND CHILD WAS MADE BY ASSUMING A DAILY WATER INGESTION OF 2 LITERS/DAY FOR ADULTS AND 1 LITER/DAY FOR CHILDREN. WITH THE EXCEPTION OF BIS(2-ETHYLHEXYL) PHTHALATE, THIS RESULTED IN THE ESTIMATED TOTAL DAILY INTAKES OF INDICATOR CHEMICALS EXCEEDING THAT ALLOWED BY ARARS FOR BOTH CHILDREN AND ADULTS.

THE GREATEST NON-CARCINOGENIC HEALTH RISKS ASSOCIATED WITH POTENTIAL INDICATOR CHEMICAL EXPOSURE ARE DUE TO INGESTION OF LED. IN PARTICULAR, YOUNG CHILDREN (LESS THAN 6 YEARS OLD) MAY BE VERY SENSITIVE TO NEUROTOXIC EFFECTS OF LEAD AND SHOULD BE CONSIDERED THE RECEPTOR POPULATION AT GREATEST RISK OF DEVELOPING LEAD INTOXICATION (EPA 1984).

THE NON-CARCINOGENIC HEALTH RISKS ASSOCIATED WITH THE CALCULATED EXPOSURES TO BENZENE, BIS(2-ETHYLHEXYL) PHTHALATE, AND TRICHLOROETHYLENE ARE CONSIDERED MINIMAL. THERE IS NO HUMAN EVIDENCE TO SUGGEST THAT EXPOSURE TO THESE CHEMICALS AT THE CALCULATED MEAN CONCENTRATIONS IN GROUNDWATER WOULD CAUSE CHRONIC HEALTH EFFECTS.

TRICHLOROETHYLENE, BENZENE AND BIS(2-ETHYLHEXYL) PHTHALATE ARE CONSIDERED POTENTIAL CARCINOGENS. ESTIMATES OF THE CANCER RISK ASSOCIATED WITH POTENTIAL EXPOSURE TO THESE COMPOUNDS ARE CONSIDERED LOW. HOWEVER, THE CALCULATED RISK DUE TO EXPOSURE TO BENZENE IS HIGHER THAN THE RISKS ASSOCIATED WITH EXPOSURE TO BIS(2-ETHYLHEXYL) PHTHALATE AND TRICHLOROETHYLENE.

THE PUBLIC HEALTH ASSESSMENT PERFORMED DURING OPERABLE UNIT ONE CONCLUDED THAT WITH CONTINUED RELEASE OF CONTAMINANTS FROM THE SOURCE INTO THE GROUNDWATER THERE IS THE POTENTIAL FOR EXPOSURE TO THE INDICATOR CHEMICALS AT LEVELS ABOVE ACCEPTABLE CONCENTRATION LEVELS AND SOME POTENTIAL FOR CARCINOGENIC RISK ABOVE THE 10(-6) RISK LEVEL BY DOWN-GRADIENT USERS BASED ON A CONSERVATIVE SCENARIO.

THE COMPARISON OF AMBIENT WATER QUALITY CRITERIA FOR AQUATIC LIFE WITH CONCENTRATION OBSERVED AT STREAM EXPOSURE POINTS INDICATES THAT AQUATIC LIFE IN THE SURFACE WATER IN THE VICINITY OF THE CELANESE FIBERS SITE MAY EXPERIENCE TOXIC EFFECTS FROM EXPOSURES TO BIS(2-ETHYLHEXYL) PHTHALATE AND CHROMIUM. AMBIENT WATER QUALITY CRITERIA FOR BIS(2-ETHYLHEXYL) PHTHALATE INDICATE THAT ACUTE TOXIC EFFECTS HAVE BEEN OBSERVED IN FRESHWATER AT 3 UG/L (EPA, 1986). THE CONCENTRATIONS

OF 20 AND 50 UG/L WERE OBSERVED AT TWO EXPOSURE POINTS FOR BIS(2-ETHYLHEXYL) PHTHALATE. AMBIENT WATER QUALITY CRITERIA FOR CHROMIUM INDICATE THAT SAFE LEVELS OF ACUTE AND CHRONIC EXPOSURE TO CHROMIUM ARE 16 AND 11 UG/L FOR FRESHWATER AQUATIC LIFE. AT ONE EXPOSURE POINT, THE LEVEL OF CHROMIUM WAS 63 UG/L, WHICH SIGNIFICANTLY EXCEEDED AMBIENT WATER QUALITY CRITERIA.

8.0 DEVELOPMENT AND SCREENING OF ALTERNATIVES

8.1 INTRODUCTION

THIS SECTION PROVIDES A CONCISE DESCRIPTION OF HOW EACH ALTERNATIVE WOULD ADDRESS THE SITE FROM INITIATION OF THE REMEDY TO COMPLETION OF SITE ACTIVITIES. REMEDIATION OF THE CONTAMINATED SOILS, BURN PIT RESIDUALS, SEDIMENTS, AND SLUDGES WILL ADDRESSED.

APPLICABLE TECHNOLOGIES ARE THOSE TECHNIQUES THAT MAY HAVE SIGNIFICANT ENEFICIAL SITE EFFECTS. TABLE 8-1 IDENTIFIES ALL THE POTENTIAL ALTERNATIVES EVALUATED IN THE PRELIMINARY SCREENING OF TECHNOLOGIES. TABLE 8-2 REPRESENTS THOSE ALTERNATIVES RETAINED FOR IN-DEPTH ANALYSES. ALTERNATIVES FOR DETAILED EVALUATION WERE SELECTED TO REPRESENT A RANGE OF REMEDIAL ACTIONS BASED UPON: OVERALL PROTECTIVENESS OF HUMAN HEALTH AND THE ENVIRONMENT, COST-EFFECTIVENESS, THE USE OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE, AND TREATMENT THAT REDUCES TOXICITY, MOBILITY, OR VOLUME AS A PRINCIPAL ELEMENT. ALL ALTERNATIVES CONSIDERED WILL MEET ARARS OR MEET THE CONDITIONS FOR AN ARARS WAIVER. THE NO ACTION ALTERNATIVE IS RETAINED WHETHER OR NOT IT ATTAINS ARARS, AS PROSCRIBED BY SARA, TO PROVIDE A BASELINE FOR COMPARISON OF ALTERNATIVES. THE LIST OF ALTERNATIVES FOR DETAILED EVALUATION IS SHOWN IN TABLE 8-3. IN THE EVALUATION, EFFORTS HAVE BEEN MADE TO IDENTIFY AND QUANTIFY POTENTIAL FACTORS THAT MAY AFFECT THE SCOPE AND COST OF EACH ALTERNATIVE. FOR FACTORS THAT CANNOT PRESENTLY BE QUANTIFIED, ASSUMPTIONS WILL BE PRESENTED.

THE FOLLOWING ARE DISCUSSED FOR EACH ALTERNATIVE:

- ENGINEERING CONSIDERATIONS
- OPERATION AND MAINTENANCE
- MONITORING
- OFF-SITE DISPOSAL, PERMITS AND TRANSPORTATION
- HEALTH AND SAFETY
- COST ESTIMATES

8.2 ALTERNATIVES ANALYSIS

8.2.1 COMMON REMEDIAL COMPONENT DISCUSSION

EXCAVATION AND REGRADING

EXCAVATION OF CONTAMINANT MASS AND CONTAMINATED SOILS IS REQUIRED FOR ALL REMEDIAL ALTERNATIVES DISCUSSED, SINCE NO IN-SITU ALTERNATIVES PASSED THE INITIAL SCREEN. BASED ON THE FINDINGS OF THE EXPANDED CHARACTERIZATION STUDY, IT WAS DETERMINED THAT EXCAVATION FOR THE SITE SHOULD BE BY FRONT-END LOADERS, BACKHOES OR BULLDOZERS. IT IS ASSUMED THAT GRU, BURN PIT RESIDUALS, PLASTIC CHIPS AND STREAM SEDIMENTS WILL BE EXCAVATED USING THIS TECHNOLOGY. THE VOLUME OF EXCAVATED MATERIAL IS ASSUMED TO BE 1800, 1200, 600 AND 110 CUBIC YARDS, RESPECTIVELY, FOR A TOTAL ESTIMATED VOLUME OF 3710 CUBIC YARDS. FOLLOWING EXCAVATION, THE SITE WOULD BE BACKFILLED AND REGRADED TO PROMOTE DRAINAGE. THE REGRADING OPERATION WOULD BE ACCOMPLISHED BY BULLDOZERS OR GRADERS.

BASED ON THE EXTENSIVE SAMPLING CONDUCTED DURING THE EXPANDED SITE CHARACTERIZATION STUDY A GREAT DEAL IS KNOWN ABOUT THE MATERIALS DISPOSED OF IN THE SOURCE AREA. THE GRU SLUDGES, BURN PIT RESIDUES, AND PLASTIC CHIPS ARE ALL HIGHLY VISIBLE AND EASILY IDENTIFIED BY VISUAL INSPECTION. FOR TREATMENT PURPOSES MATERIAL WILL BE EXCAVATED TO THE WASTE-SOIL INTERFACE AND TO A DEPTH OF AT LEAST AN ADDITIONAL TWO FEET UNTIL NO VISIBLE CONTAMINATION REMAINS. THIS SHOULD SIGNIFICANTLY REDUCE CONCENTRATIONS OF INDICATOR CHEMICALS LEACHING TO GROUNDWATER. RESIDUAL CONTAMINATION IS ANTICIPATED TO BE MINIMAL AND ANY LEACHING TO GROUNDWATER WILL BE MITIGATED BY THE OPERABLE UNIT ONE PUMP AND TREAT SYSTEM.

STREAM SEDIMENT REMOVAL

CONTAMINATED STREAM SEDIMENTS WERE IDENTIFIED IN THE RI AND FS FOR THE FIRST OPERABLE UNIT. STREAM SEDIMENT REMEDIATION WOULD BE NEEDED FOR EACH OF THE REMEDIAL ALTERNATIVES EXCEPT THE NO ACTION ALTERNATIVE. THE AREA NORTH OF THE WASTEWATER TREATMENT POND IS CONTAMINATED WITH SOME HSL ORGANICS (FIGURE 8-1). THE RI FOUND STREAM SEDIMENT CONTAMINATION IN SAMPLES REPRESENTING DEPTHS OF ABOUT 2 TO 4 INCHES. IT IS ASSUMED THAT STREAM SEGMENTS HIGHLIGHTED ON THE FIGURE WILL BE EXCAVATED TO A DEPTH OF 6 INCHES FOR THE PURPOSE OF COST ESTIMATING. THE VOLUME OF SEDIMENT NEEDING REMEDIATION IS ESTIMATED AT 110 CUBIC YARDS.

PLASTIC CHIP AND BURN PIT RESIDUAL

PLASTIC CHIP AND BURN PIT RESIDUALS ARE DISPOSED IN THE SAME AREA AS, AND IN SOME LOCATIONS, CO-DISPOSED WITH THE GRU WASTE. REMEDIATION OF THE PLASTIC CHIP AND BURN PIT RESIDUALS WOULD BE NEEDED FOR EACH ALTERNATIVE EXCEPT NO ACTION. THE CHIP AND BURN PIT RESIDUALS HAVE LOWER ORGANIC CONTENT AND THERMAL VALUE THAN THE GRU SLUDGES (NOT A FACTOR FOR COMPOSTING ALTERNATIVES) AND ARE PLANNED FOR SEGREGATION AND PROCESSING SEPARATELY FROM THE GRU MATERIAL FOR THERMAL TREATMENT ALTERNATIVES. BASED ON THE CHARACTERIZATION STUDY, IT IS ESTIMATED THAT THERE ARE ABOUT 600 CY OF PLASTIC CHIPS AND 1200 CY OF BURN PIT RESIDUALS FOR TREATMENT OR DISPOSAL.

STREAM SEDIMENT, PLASTIC CHIP AND BURN PIT RESIDUALS

THE STREAM SEDIMENTS, PLASTIC CHIPS AND BURN PIT RESIDUALS ARE DISCRETE UNITS/MATERIAL TYPES WHICH HAVE TOTAL HSL ORGANIC LOADINGS OF LESS THAN 1 TO ABOUT 24 MG/KG WHERE ANALYZED, AND BTU VALUES GENERALLY LESS THAN 2000 BTU/LB. A TECHNICAL NEED TO THERMALLY TREAT THESE MATERIALS HAS NOT BEEN IDENTIFIED, AND THEY ARE NOT TECHNICALLY AMENABLE TO THE TREATMENT PROCESSES EVALUATED. FOR THERMAL TREATMENT ALTERNATIVES COSTING PURPOSES, DISPOSAL OF THESE MATERIALS OFF-SITE AT A FULLY RCRA-COMPLIANT SECURE LANDFILL IS ASSUMED. THE OFF-SITE DISPOSAL COST IS INCLUDED IN COST ANALYSES FOR ALL ALTERNATIVES EXCEPT ALTERNATIVE 4 LISTED IN TABLE 8-3. ALTERNATIVE 4 CONSIDERS FIXATION AND ON-SITE LANDFILLING FOR THE STREAM SEDIMENTS, PLASTIC CHIP AND BURN PIT RESIDUALS.

8.2.2 ON-SITE ROTARY KILN INCINERATION WITH OFF-SITE DISPOSAL OF RESIDUALS

DESCRIPTION

THIS ALTERNATIVE REQUIRES SOURCE EXCAVATION AND REPLACEMENT WITH CLEAN FILL; THE INSTALLATION ON-SITE OF A ROTARY KILN INCINERATOR TO TREAT THE GRU SLUDGES; AND THE OFF-SITE DISPOSAL OF THE STREAM SEDIMENTS, PLASTIC CHIPS AND BURN PIT RESIDUALS AS DISCUSSED UNDER "COMMON REMEDIAL COMPONENT DISCUSSION".

ROTARY KILN INCINERATORS ARE CYLINDRICAL, REFRACTORY-LINED SHELLS, CAPABLE OF HANDLING A WIDE VARIETY OF SOLID AND LIQUID WASTES. THEY ARE FUELED BY NATURAL GAS, OIL OR PULVERIZED COAL. MOST OF THE HEATING OF THE WASTE IS DUE TO HEAT TRANSFER BETWEEN THE COMBUSTION PRODUCT GASSES AND THE WALLS OF THE KILN. THE BASIC TYPE OF ROTARY KILN INCINERATOR CONSISTS OF THE KILN AND AN AFTERBURNER.

WASTES ARE INJECTED INTO THE KILN AT THE HIGHER END AND ARE PASSED THROUGH THE COMBUSTION ZONE AS THE KILN ROTATES. THE ROTATION MIXES THE WASTE WITH COMBUSTION GASES, THEREBY IMPROVING DESTRUCTION OF ORGANIC
MATERIALS. ROTARY KILNS OFTEN EMPLOY AFTERBURNERS TO ENSURE COMPLETE COMBUSTION. MOST ROTARY KILNS ARE EQUIPPED WITH WET SCRUBBER EMISSION CONTROLS.

THE RESIDENCE TIME AND TEMPERATURE DEPEND UPON COMBUSTION CHARACTERISTICS OF THE WASTE. RESIDENCE TIMES CAN RANGE FROM A FEW SECONDS TO AN HOUR OR MORE FOR BULK SOLIDS. COMBUSTION TEMPERATURES RANGE FROM 1500 DEGREES TO 3000 DEGREES FAHRENHEIT

ROTARY KILNS ARE CAPABLE OF BURNING WASTE IN ANY PHYSICAL FORM. THEY CAN INCINERATE SOLIDS AND LIQUIDS INDEPENDENTLY, OR IN COMBINATION, AND CAN ACCEPT WASTE FEED WITHOUT ANY PREPARATION. HAZARDOUS WASTES WHICH HAVE BEEN TREATED IN ROTARY KILNS INCLUDE PCBS, TARS, OBSOLETE MUNITIONS,

POLYVINYL CHLORIDE WASTES AND BOTTOMS FROM SOLVENT RECLAMATION OPERATIONS.

BECAUSE OF ABILITY TO HANDLE WASTE IN ANY PHYSICAL FORM AND HIGH WASTE DESTRUCTION EFFICIENCY, ROTARY KILNS ARE A PREFERRED METHOD FOR TREATING MIXED HAZARDOUS SOLID RESIDUES.

THE LIMITATIONS OF ROTARY KILNS INCLUDE SUSCEPTIBILITY TO THERMAL SHOCK, THE NECESSITY FOR VERY CAREFUL MAINTENANCE, NEED FOR ADDITIONAL AIR DUE TO LEAKAGE, HIGH PARTICULATE LOADING, RELATIVELY LOW THERMAL EFFICIENCY AND A HIGH CAPITAL COST FOR INSTALLATION.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

REMOVAL OF CONTAMINATED SOILS AND REPLACEMENT WITH CLEAN FILL WOULD SUBSTANTIALLY REDUCE OR ELIMINATE RISK POSED BY DERMAL, INHALATION, AND INGESTION EXPOSURE TO SOURCE MATERIAL AT THE SITE.

REMOVAL OF THE SOURCE MATERIAL WOULD ALSO REMOVE CONTAMINANTS WHICH COULD BE RELEASED TO THE GROUNDWATER. THIS WOULD ALLEVIATE FUTURE GROUNDWATER CONTAMINATION.

INCINERATION OF GRU SLUDGES DESTROYS CONTAMINANTS, ELIMINATING A PRINCIPAL THREAT. DISPOSAL IN A RCRA SUBTITLE C FACILITY OF THE ASH AND THE REMAINING CONTAMINATED MATERIALS SUBSTANTIALLY REDUCES RISK POSED BY DERMAL, INHALATION, AND INGESTION EXPOSURE.

COMPLIANCE WITH ARARS

THIS ALTERNATIVE COMPLIES WITH ARARS.

THE GRU SLUDGES WOULD BE TREATED ON-SITE IN ACCORDANCE WITH RCRA 40 CFR SUBPART O WHICH APPLIES TO THE MOBILIZATION, OPERATION, AND CLOSING OF THERMAL DESTRUCTION UNITS. THESE REQUIREMENTS, THOUGH NOT APPLICABLE, HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE DUE TO THE SIMILARITY OF THE WASTES BEING MANAGED AND THE ACTIONS BEING TAKEN. SPECIFIC OPERATING PRACTICES NECESSARY TO MEET THE PERFORMANCE OBJECTIVES WOULD BE DETERMINED THROUGH A TRIAL BURN AT THE SITE AFTER THE INSTALLATION OF THE ROTARY KILN.

PERMITS ARE NOT REQUIRED FOR ON-SITE REMEDIAL ACTIONS AT SUPERFUND SITES; HOWEVER, ANY ON-SITE ACTION MUST MEET THE SUBSTANTIVE TECHNICAL REQUIREMENTS OF THE PERMIT PROCESS. THIS ALTERNATIVE WOULD COMPLY WITH THE CLEAN AIR ACT 40 CFR PART 50 CONCERNING PARTICULATES AND VOLATILES EMISSIONS DURING EXCAVATION.

THE SUBSTANCES TRANSPORTED OFF-SITE FOR DISPOSAL IN A RCRA SUBTITLE C FACILITY ARE NOT RCRA LISTED OR RCRA CHARACTERISTIC WASTES. LANDBAN IS NOT ARAR. UNTIL THE EPA RULE-MAKING IS COMPLETED, THE CERCLA PROGRAM WILL NOT CONSIDER LANDBAN TO BE RELEVANT AND APPROPRIATE TO SOIL AND DEBRIS THAT DOES NOT CONTAIN RCRA RESTRICTED WASTES.

FACILITIES USED FOR OFF-SITE DISPOSAL ARE REQUIRED BY CERCLA SECTION 121 (5) TO BE IN COMPLIANCE WITH ALL PERTINENT RCRA REQUIREMENTS, THAT IS, TO HAVE A RCRA PERMIT OR INTERIM STATUS AND HAVE AN ON-GOING CORRECTIVE ACTION FOR ANY SWMU (SOLID WASTE MANAGEMENT UNIT) RELEASES (THE SUPERFUND OFF-SITE POLICY PROVIDES GUIDANCE ON MEETING THIS REQUIREMENT).

TO BE CONSIDERED

THE STATE OF NORTH CAROLINA HAS PROPOSED NORTH CAROLINA AIR TOXIC AS LISTED IN THE NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15, CHAPTER 2, SUBCHAPTER 2D. THESE WILL BE PROMULGATED IN THE FALL OF 1989. IF THESE ARE MORE STRINGENT THAN FEDERAL STANDARDS THESE WILL APPLY TO THE REMEDIAL ACTION.

LONG-TERM EFFECTIVENESS AND PERMANENCE

INCINERATION OF THE GRU SLUDGES PERMANENTLY DESTROYS THE ORGANIC CONTAMINANTS. RESIDUALS AND NON-GRU CONTAMINATED MATERIALS' DISPOSAL AT A RCRA SUBTITLE C FACILITY IS LESS PERMANENT, SINCE FACILITY CONTAINMENT STRUCTURES ARE SUBJECT TO FAILURE. NO CONTAMINANTS WILL REMAIN ON-SITE

ABOVE HEALTH-BASED LEVELS AFTER THE GROUNDWATER REMEDIATION (OU #1) IS COMPLETED.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

THE PRIMARY SOURCE MATERIALS WILL BE DESTROYED BY INCINERATION, ELIMINATING TOXICITY. MOBILITY AND VOLUME ARE NOT CONSIDERED TO BE REDUCED BY OFF-SITE CONTAINMENT; THESE EFFECTS CAN ONLY BE PRODUCED BY TREATMENT.

SHORT TERM EFFECTIVENESS

EXCAVATION OF CONTAMINATED MATERIALS MAY INCREASE THE RISK OF INHALATION, DERMAL CONTACT, AND INGESTION EXPOSURE DURING IMPLEMENTATION. INCINERATOR EMISSIONS MAY HAVE POTENTIAL SHORT TERM IMPACTS. OFF-SITE TRANSPORTATION OF STREAM SEDIMENTS AND BURN PIT RESIDUALS MAY INCREASE SHORT TERM RISKS TO POPULATIONS ALONG THE TRANSPORT ROUTE.

IMPLEMENTABILITY

INCINERATION IS A PROVEN TECHNOLOGY. THIS ALTERNATIVE WOULD REQUIRE KILN INCINERATOR INSTALLED ON-SITE. WASTES WOULD BE FED INTO THE INCINERATOR AT A RATE TO PROVIDE A SUFFICIENT RETENTION TIME FOR COMPLETE COMBUSTION. THIS ALTERNATIVE WOULD REQUIRE A TEST BURN PRIOR TO FULL-SCALE OPERATION. AIR MONITORING AND ANALYSIS EQUIPMENT WOULD MONITOR SCRUBBER EFFLUENT, SOLIDS RESIDUE, COMBUSTION GASSES, SYSTEM PRESSURE AND TEMPERATURE AND AIR FLOW RATES.

STATE AND COMMUNITY ACCEPTANCE

THE PRIMARY ISSUE IS PUBLIC CONCERN ABOUT INCINERATOR EMISSIONS.

COST EFFECTIVENESS

THE COST ESTIMATE FOR THIS ALTERNATIVE IS APPROXIMATELY $3.7 MILLION. A COMPLETE BREAKDOWN ON THE COST ESTIMATE CAN BE FOUND IN APPENDIX IX OF THE FEASIBILITY STUDY REPORT.

8.2.3 INCINERATION OFF-SITE

DESCRIPTION

THIS ALTERNATIVE REQUIRES THE EXCAVATION OF SOURCE MATERIAL AND TRANSPORT OF THE GRU MATERIAL TO AN OFF-SITE INCINERATOR. CONTAMINATED MATERIALS WOULD BE REPLACED WITH CLEAN FILL. THE NON-GRU MATERIAL WOULD BE LANDFILLED OFF-SITE AS DISCUSSED IN SECTION 8.2.L.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS ALTERNATIVE IS A PERMANENT ACTION FOR DESTRUCTION OF THE GRU SOURCE MATERIAL.

REMOVAL OF CONTAMINATED MATERIAL AND REPLACEMENT WITH CLEAN FILL WOULD SUBSTANTIALLY REDUCE OR ELIMINATE ON-SITE EXPOSURE AND RISK POSED BY SOURCE MATERIALS.

REMOVAL OF THE SOURCE MATERIAL WOULD ALSO REMOVE CONTAMINANTS WHICH COULD BE RELEASED TO THE GROUNDWATER. THIS WOULD ALLEVIATE FUTURE GROUNDWATER CONTAMINATION.

DISPOSAL IN A RCRA SUBTITLE C FACILITY OF THE NON-GRU SOURCE MATERIALS SUBSTANTIALLY REDUCES RISK POSED BY DERMAL, INHALATION, AND INGESTION EXPOSURE.

COMPLIANCE WITH ARARS

THIS ALTERNATIVE COMPLIES WITH ARARS.

THE SUBSTANCES TRANSPORTED OFF-SITE FOR DISPOSAL IN A RCRA SUBTITLE C FACILITY ARE NOT RCRA LISTED OR RCRA CHARACTERISTIC WASTES. RCRA LANDBAN 40 CFR 268 IS NOT APPLICABLE. A RELEVANT AND APPROPRIATE DETERMINATION IS NOT PERFORMED FOR REMEDIAL ALTERNATIVES WHICH INVOLVE OFF-SITE

ACTIONS.

THE GRU SLUDGES WOULD BE INCINERATED OFF-SITE IN ACCORDANCE WITH RCRA 40 CFR SUBPART O AT A FULLY-PERMITTED FACILITY. FACILITIES USED FOR OFF-SITE DISPOSAL OR TREATMENT ARE REQUIRED BY CERCLA ACTION 121 (5) TO BE IN COMPLIANCE WITH ALL PERTINENT RCRA REQUIREMENTS, THAT IS, TO HAVE A RCRA PERMIT OR INTERIM STATUS AND HAVE AN ON-GOING CORRECTIVE ACTION FOR ANY SWMU (SOLID WASTE MANAGEMENT UNIT) RELEASES (THE SUPERFUND OFF-SITE POLICY PROVIDES GUIDANCE ON MEETING THIS REQUIREMENT).

THIS ALTERNATIVE WOULD COMPLY WITH THE CLEAN AIR ACT 40 CFR PART 50 CONCERNING PARTICULATES AND VOLATILES EMISSIONS DURING EXCAVATION.

TO BE CONSIDERED

THE STATE OF NORTH CAROLINA HAS PROPOSED NORTH CAROLINA AIR TOXIC REGULATIONS AS LISTED IN THE NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15, CHAPTER 2, SUBCHAPTER 2D. THESE WILL BE PROMULGATED IN THE FALL OF 1989. IF THESE ARE MORE STRINGENT THAN FEDERAL STANDARDS THESE WILL APPLY TO THE REMEDIAL ACTION.

LONG-TERM EFFECTIVENESS AND PERMANENCE

THIS ALTERNATIVE WOULD HAVE THE SAME LONG-TERM EFFECTIVENESS AS ALTERNATIVE 8.2.2, AND WOULD PROVIDE THE SAME DEGREE OF PERMANENCE.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

THIS ALTERNATIVE WOULD PROVIDE THE SAME DEGREE OF REDUCTION OF TOXICITY, MOBILITY, OR VOLUME AS ALTERNATIVE 8.2.2.

SHORT TERM EFFECTIVENESS

THIS ALTERNATIVE PROVIDES THE SAME SHORT TERM EFFECTIVENESS AS ALTERNATIVE 8.2.2, EXCEPT THAT TRANSPORTATION OFF-SITE OF GRU SLUDGE MATERIALS INVOLVES MORE RISK THAN OFF-SITE TRANSPORTATION OF OTHER CONTAMINATED MATERIALS DUE TO THE HIGHER CONCENTRATIONS OF CARCINOGENS AND TOXIC CHEMICALS.

IMPLEMENTABILITY

THIS ALTERNATIVE WOULD USE PROVEN TECHNOLOGY. WASTE DISPOSAL RATE FOR THE GRU SLUDGES WOULD BE DEPENDENT ON THE CAPACITY OF THE OFF-SITE INCINERATOR WOULD BE REQUIRED. THE AVAILABILITY OF A LOCAL (SOUTH CAROLINA) INCINERATOR FACILITY IS AN ISSUE SINCE SOUTH CAROLINA HAS BEEN INCREASINGLY RESISTANT TO ACCEPTING OUT-OF-STATE WASTES.

COST EFFECTIVENESS

THE TOTAL COST OF OFF-SITE INCINERATION IS DEPENDENT ON THE COST OF INCINERATION AND THE TRANSPORTATION CHARGES. QUOTATIONS OBTAINED FOR THE FEASIBILITY STUDY RANGE FROM $600 TO $1500/TON. ASSUMING $1000/TON, THIS ALTERNATIVE COSTS $3.9 MILLION. A BREAKDOWN OF THE COSTS ARE CONTAINED APPENDIX IX OF THE FEASIBILITY STUDY REPORT.

STATE AND COMMUNITY ACCEPTANCE

THE PRIMARY ISSUE MAY BE PUBLIC CONCERN OVER POTENTIAL SPILLS WHILE TRANSPORTING THE WASTE THROUGH THEIR COMMUNITY.

8.2.4 ON-SITE ROTARY KILN INCINERATION WITH CHEMICAL FIXATION OF RESIDUALS

DESCRIPTION

THIS ALTERNATIVE WOULD ENTAIL THE EXCAVATION OF SOURCE MATERIAL, INCINERATION OF THE GRU

MATERIAL, CHEMICAL FIXATION OF THE ASH AND NON-GRU SOURCE MATERIAL, AND REPLACEMENT OF THE FIXED MATERIAL ON-SITE. CLEAN FILL WOULD BE BROUGHT IN TO RESTORE THE SITE TO NATURAL GRADES.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS ALTERNATIVE WOULD PERMANENTLY DESTROY GRU SLUDGE CONTAMINANTS AND WOULD REMOVE OR MINIMIZE THE POTENTIAL RISKS ASSOCIATED WITH THE MATERIAL TO BE CHEMICALLY FIXED. DERMAL, INGESTION, AND INHALATION CONTACT WITH SITE CONTAMINANTS WOULD BE ELIMINATED, AND RISKS POSED BY CONTINUED GROUNDWATER CONTAMINATION WOULD BE REDUCED.

COMPLIANCE WITH ARARS

THIS ALTERNATIVE COMPLIES WITH ARARS.

BASED UPON THE LAND DISPOSAL RESTRICTION (LANDBAN) AND IN ACCORDANCE WITH 40 CFR PART 26, RCRA LISTED OR CHARACTERISTIC WASTES WHICH ARE EXCAVATED, TREATED, AND THEN REDEPOSITED IN THE SAME UNIT OF CONTAMINATION CONSTITUTES PLACEMENT, AND THEREFORE LANDBAN IS POTENTIALLY AN ARAR.

THE GRU SLUDGES WOULD BE TREATED ON-SITE IN ACCORDANCE WITH RCRA 40 CFR SUBPART O WHICH APPLIES TO THE MOBILIZATION, OPERATION, AND CLOSING OF THERMAL DESTRUCTION UNITS. THESE REQUIREMENTS, THOUGH NOT APPLICABLE, HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE DUE TO THE SIMILARITY OF THE WASTES BEING MANAGED AND THE ACTIONS BEING TAKEN. SPECIFIC OPERATING PRACTICES NECESSARY TO MEET THE PERFORMANCE OBJECTIVES WOULD BE DETERMINED THROUGH A TRIAL BURN AT THE SITE AFTER THE INSTALLATION OF THE ROTARY KILN.

PERMITS ARE NOT REQUIRED FOR ON-SITE REMEDIAL ACTIONS AT SUPERFUND SITES HOWEVER, ANY ON-SITE ACTION MUST MEET THE SUBSTANTIVE TECHNICAL REQUIREMENTS OF THE PERMIT PROCESS. THIS ALTERNATIVE WOULD COMPLY WITH THE CLEAN AIR ACT 40 CFR PART 50 CONCERNING PARTICULATES AND VOLATILES EMISSIONS DURING EXCAVATION.

THE CHEMICAL FIXATION TREATMENT PROCESS WOULD OCCUR ON-SITE.

BECAUSE FIXATION WOULD RESULT IN A VOLUME INCREASE, AND WOULD OCCUPY A LARGER AREA OF THE SITE, ANY LATERAL EXTENSION OF THE WASTE DISPOSAL AREA WOULD REQUIRE THAT THE ENTIRE DISPOSAL AREA COMPLY WITH RCRA 40 CFR 264.228 AND 40 CFR 264.221, WHICH ARE RELEVANT AND APPROPRIATE. VERTICAL EXTENSIONS OF THE WASTE MONOLITH DO NOT CREATE A NEW WASTE MANAGEMENT AREA, SO 40 CFR 264.228 AND 264.221 ARE NOT ARAR IN THIS CASE.

THE FIXED MATERIAL IS NOT HAZARDOUS AS DEFINED BY RCRA SINCE CONTAMINANTS ARE BOUND IN THE MATRIX AND WILL NOT LEACH. THE WASTES UNDERGOING FIXATION ARE NOT RCRA LISTED OR CHARACTERISTIC WASTES, AND THEREFORE LANDBAN IS NOT APPLICABLE. THESE MATERIALS ARE NOT SIMILAR TO A RCRA HAZARDOUS WASTE, SO LANDBAN IS NOT RELEVANT AND APPROPRIATE.

TO BE CONSIDERED

THE STATE OF NORTH CAROLINA HAS PROPOSED NORTH CAROLINA AIR TOXIC REGULATIONS AS LISTED IN THE NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15, CHAPTER 2, SUBCHAPTER 2D. THESE WILL BE PROMULGATED IN THE FALL OF 1989. IF THESE ARE MORE STRINGENT THAN FEDERAL STANDARDS THESE WILL APPLY TO THE REMEDIAL ACTION.

LONG-TERM EFFECTIVENESS AND PERMANENCE

THE GRU SLUDGE MATERIALS WILL BE PERMANENTLY DESTROYED. FIXATION OF THE INCINERATOR ASH AND NON-GRU SOURCE MATERIALS MAY PROVIDE GOOD LONG-TERM EFFECTIVENESS AND PERMANENCE. LONG-TERM PERFORMANCE DATA FOR THIS TECHNOLOGY IN APPLICATIONS INVOLVING ORGANIC CHEMICALS IS NOT AVAILABLE; HOWEVER, SIMULATION DATA PREDICT GOOD LONG-TERM EFFECTIVENESS AND PERMANENCE. NO CONTAMINANTS WILL REMAIN ON-SITE ABOVE HEALTH-BASED LEVELS AFTER THE GROUNDWATER REMEDIATION (OU #1) IS COMPLETED.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME

GRU SLUDGE CONTAMINATION IS PERMANENTLY DESTROYED IN THE INCINERATION PROCESS AND THE VOLUME SUBSTANTIALLY REDUCED. MOBILITY OF CONTAMINANTS IN THE ASH AND NON-GRU SOURCE MATERIALS IS REDUCED SIGNIFICANTLY BY THE CHEMICAL FIXATION PROCESS. THE VOLUME OF SOLIDIFICATION MATERIALS INCREASES DUE TO THE ADDITIONAL VOLUME OF THE ADMIXTURE FORMULATION.

SHORT TERM EFFECTIVENESS

EXCAVATION OF CONTAMINATED MATERIALS AND THE MIXING FOR THE FIXATION PROCESS MAY INCREASE THE RISK OF INHALATION, DERMAL CONTACT, AND INGESTION EXPOSURE DURING IMPLEMENTATION. INCINERATION EMISSIONS MAY HAVE POTENTIAL SHORT TERM IMPACTS.

IMPLEMENTABILITY

INCINERATION IS A PROVEN TECHNOLOGY. SOLIDIFICATION AND CHEMICAL FIXATION HAVE BEEN SHOWN TO BE EFFECTIVE FOR INCINERATION ASH. ADDITIONAL BENCH-SCALE OR PILOT TESTING MAY BE REQUIRED TO OPTIMIZE THE ADMIXTURE FORMULATION.

COST EFFECTIVENESS

THE COST ESTIMATE FOR THIS ALTERNATIVE IS ABOUT $3.5 MILLION. A COMPLETE BREAKDOWN OF THE COST ESTIMATE CAN BE FOUND IN APPENDIX IX OF THE FEASIBILITY STUDY REPORT.

STATE AND COMMUNITY ACCEPTANCE

THE PRIMARY ISSUE IS PUBLIC CONCERN OVER INCINERATOR EMISSIONS.

8.2.5 WET AIR OXIDATION WITH EFFLUENT TREATMENT

DESCRIPTION

WET AIR OXIDATION REFERS TO THE AQUEOUS PHASE OXIDATION OF DISSOLVED OR SUSPENDED ORGANIC MATERIALS. OXIDATION OCCURS IN AN AQUEOUS ENVIRONMENT AT TEMPERATURES RANGING FROM 350 DEGREES FAHRENHEIT TO 680 DEGREES FAHRENHEIT. THIS RELATIVELY LOW TEMPERATURE OXIDATION CAN BE ACCOMPLISHED DUE TO THE CATALYTIC EFFECT OF THE WATER AND THE HIGH SOLUBILITY AND DIFFUSIVENESS OF OXYGEN IN WATER AT THESE TEMPERATURES. THE WATER ALSO SERVES TO MODERATE THE RATE OF OXIDATION BY REMOVING EXCESS HEAT THROUGH EVAPORATION. IN ORDER TO PREVENT ALL OF THE WATER FROM EVAPORATING, THE PROCESS MUST BE OPERATED AT PRESSURE OF 300 TO 3,000 PSIG (POUNDS PER SQUARE INCH GAGE).

THE OXYGEN REQUIRED BY THE WET AIR OXIDATION PROCESS IS PROVIDED BY AN OXYGEN-CONTAINING GAS, USUALLY AIR, BUBBLED THROUGH THE WASTEWATER, THUS THE TERM "WET AIR OXIDATION."

PREHEATED AIR-WASTEWATER MIXTURE ENTERS THE REACTOR VESSEL WHERE THE OXYGEN PRESENT IN THE AIR REACTS WITH THE ORGANIC MATERIALS PRESENT IN THE WASTEWATER. DURING OXIDATION OF THE ORGANICS, EXOTHERMIC HEAT IS RELEASED AND RAISES THE TEMPERATURE OF THE REACTOR CONTENTS.

THE OXIDATION PRODUCTS ARE PRIMARILY CARBON DIOXIDE, WATER AND SHORT CHAIN ORGANIC ACIDS. SULFUR AND AMINO COMPOUND ARE CONVERTED TO SULFATE AND AMMONIA, RESPECTIVELY, AND THE EXHAUST GASSES CONTAIN NO SULFUR OR NITROGEN OXIDES.

THE WET AIR OXIDATION UNIT PRODUCES TWO SIDE STREAMS; ON OFF GAS STREAM CONSISTING OF CARBON DIOXIDE, WATER VAPOR AND TRACE ORGANICS AND AN OXIDIZED SLURRY STREAM. THE OFF GAS STREAM REQUIRES WATER SCRUBBING.
THE OXIDIZED SLURRY STREAM CONTAINS SUSPENDED SOLIDS AND REQUIRES SETTLING. FOLLOWING THE WET AIR OXIDATION UNIT, A CLARIFIER OR FILTRATION SYSTEM WOULD BE INSTALLED FOR REMOVAL OF THE SOLIDS. SIZING OF THE CLARIFIER OR FILTER AND CONDITIONING REQUIREMENTS WOULD HAVE TO BE DETERMINED FROM SOLIDS SETTLING. NON GRU SOURCE MATERIAL WILL BE DISPOSED OF OFF SITE IN A RCRA SUBTITLE C FACILITY.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

REMOVAL OF CONTAMINATED MATERIALS AND REPLACEMENT WITH CLEAN FILL WOULD SUBSTANTIALLY REDUCE OR ELIMINATE RISK POSED BY POTENTIAL DERMAL INHALATION AND INGESTION EXPOSURE. REMOVAL OF THE SOURCE MATERIAL WOULD ALSO ALLEVIATE FUTURE GROUNDWATER CONTAMINATION BY ELIMINATING A SOURCE FOR CONTINUING CONTAMINATION.

COMPLIANCE WITH ARARS

THIS ALTERNATIVE WOULD COMPLY WITH ARARS.

THE GRU SLUDGES WOULD BE TREATED ON-SITE IN ACCORDANCE WITH RCRA 40 CFR SUBPART O WHICH APPLIES TO THE MOBILIZATION, OPERATION, AND CLOSING OF THERMAL DESTRUCTION UNITS. THIS REQUIREMENTS, THOUGH NOT APPLICABLE, HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE DUE TO THE SIMILARITY OF THE WASTE BEING MANAGED AND THE ACTIONS TAKEN. SPECIFIC OPERATING PRACTICES NECESSARY TO MEET THE PERFORMANCE OBJECTIVES WOULD BE DETERMINED THROUGH A TRIAL BURN AT THE SITE AFTER INSTALLATION OF THE WET AIR OXIDATION UNIT.

PERMITS ARE NOT REQUIRED FOR ON-SITE REMEDIAL ACTIONS AT SUPERFUND SITES; HOWEVER, ANY ON-SITE ACTION MUST MEET THE SUBSTANTIVE TECHNICAL REQUIREMENTS OF THE PERMIT PROCESS. THIS ALTERNATIVE WOULD COMPLY WITH THE CLEAN AIR ACT 40 CFR PART 50 CONCERNING PARTICULATES AND VOLATILES EMISSIONS DURING EXCAVATION.

THE SUBSTANCES TRANSPORTED OFF-SITE FOR DISPOSAL IN A RCRA SUBTITLE C FACILITY ARE NOT RCRA LISTED OR RCRA CHARACTERISTIC WASTES. LANDBAN IS NOT ARAR. UNTIL THE EPA RULE-MAKING IS COMPLETED, THE CERCLA PROGRAM WILL NOT CONSIDER LANDBAN TO BE RELEVANT AND APPROPRIATE TO SOIL AND DEBRIS THAT DOES NOT CONTAIN RCRA RESTRICTED WASTES.

FACILITIES USED FOR OFF-SITE DISPOSAL ARE REQUIRED BY CERCLA SECTION 121 (5) TO BE IN COMPLIANCE WITH ALL PERTINENT RCRA REQUIREMENTS, THAT IS, TO HAVE A RCRA PERMIT OR INTERIM STATUS AND HAVE AN ON-GOING CORRECTIVE ACTION SWMU (SOLID WASTE MANAGEMENT UNIT) RELEASES (THE SUPERFUND OFF-SITE POLICY PROVIDES GUIDANCE ON MEETING THIS REQUIREMENT).

TO BE CONSIDERED

THE STATE OF NORTH CAROLINA HAS PROPOSED NORTH CAROLINA AIR AS LISTED IN THE NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15, CHAPTER 2, SUBCHAPTER 2D. THESE WILL BE PROMULGATED IN THE FALL OF 1989. IF THESE ARE MORE STRINGENT THAN FEDERAL STANDARDS THESE WILL APPLY TO THE REMEDIAL ACTION.

LONG-TERM EFFECTIVENESS AND PERMANENCE

WET AIR OXIDATION PERMANENTLY DESTROYS THE ORGANIC CONTAMINANTS. RESIDUAL AND NON-GRU CONTAMINATED MATERIALS' DISPOSAL AT A RCRA SUBTITLE C FACILITY IS LESS PERMANENT, SINCE FACILITY CONTAINMENT STRUCTURES ARE SUBJECT TO FAILURE. NO CONTAMINANTS WILL REMAIN ON-SITE ABOVE HEALTH-BASED LEVELS AFTER THE GROUNDWATER REMEDIATION (OU #1) IS COMPLETED.

REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

THE GRU SLUDGE MATERIALS WILL BE PERMANENTLY DESTROYED.

MOBILITY AND VOLUME ARE NOT CONSIDERED TO BE REDUCED BY OFF-SITE CONTAINMENT; THESE EFFECTS CAN ONLY BE REDUCED BY TREATMENT.

SHORT-TERM EFFECTIVENESS

EXCAVATION OF CONTAMINATED MATERIALS MAY INCREASE THE RISK OF INHALATION, DERMAL CONTACT, AND INGESTION EXPOSURE DURING IMPLEMENTATION. INCINERATOR EMISSIONS MAY HAVE POTENTIAL SHORT TERM IMPACTS. OFF-SITE TRANSPORTATION OF STREAM SEDIMENTS AND BURN PIT RESIDUALS MAY INCREASE SHORT TERM RISKS TO POPULATIONS ALONG THE TRANSPORT ROUTE.

SHORT TERM RISKS ARE ALSO INTRODUCED IN THE ADDITIONAL TREATMENT REQUIRED FOR THE EFFLUENT.

IMPLEMENTABILITY

THIS ALTERNATIVE IS FEASIBLE FOR USE. FOR FEE PURPOSES, THE GRU WASTES MUST BE DILUTED PRIOR TO TREATMENT USING WET AIR OXIDATION. UNLIKE THE INCINERATION ALTERNATIVES, THIS ALTERNATIVE PRODUCES SUBSTANTIAL EFFLUENT THAT REQUIRES FURTHER TREATMENT.

STATE AND COMMUNITY ACCEPTANCE

THIS ALTERNATIVE WILL PROBABLY HAVE MORE PUBLIC ACCEPTANCE THAN INCINERATION ON-SITE SINCE IT IS A CLOSED SYSTEM TREATMENT PROCESS AND USES COMMON TECHNOLOGIES FOR FINAL EFFLUENT TREATMENT.

COST EFFECTIVENESS

THE COST OF WET AIR OXIDATION AND TREATMENT SYSTEM FOR THE EFFLUENT IS APPROXIMATELY $6.4 MILLION. A COST BREAKDOWN IS PROVIDED IN APPEND; IX OF THE FEASIBILITY STUDY REPORT.

WET AIR OXIDATION IS TYPICALLY MORE COSTLY THAN INCINERATION FOR LIQUID WASTES AND SLUDGES. COST EFFECTIVENESS IS POOR SINCE THE SUBSTANTIAL WASTE STREAMS PRODUCED REQUIRE THE FURTHER TREATMENT AND ARE LESS DESIRABLE THAN THE DESTRUCTION OF CONTAMINANTS AND SUBSEQUENT DISPOSAL OF INCINERATOR ASH AFFORDED BY INCINERATION OPTIONS.

8.2.6 COMPOSTING - STATIC PILE METHOD

DESCRIPTION

CONTAMINATED SOURCE MATERIAL WOULD BE REMOVED AND REPLACED WITH CLEAN FILL.

THIS ALTERNATIVE CONSIDERS COMPOSTING OF THE GRU MATERIALS AND OFF-SITE DISPOSAL OF THE STREAM SEDIMENTS, PLASTIC CHIPS AND BURN PIT RESIDUALS DISCUSSED IN SECTION 8.2 1. COMPOSTING IS THE MICROBIAL DEGRADATION OF THE WASTE BY AEROBIC METABOLISM USING STATIC PILES OR WINDROWS. IN THIS ALTERNATIVE, THE GRU SLUDGE IS CONVERTED TO COMPOST IN THE FOUR-STEP PROCESS OF PREPARATION, DIGESTION, DRYING AND CURING USING THE STATIC PILE METHOD.

INITIALLY, THE GRU SLUDGE IS MIXED WITH A BULKING MATERIAL SUCH AS WOOD CHIPS OR LEAVES TO FACILITATE HANDLING, TO PROVIDE THE NECESSARY STRUCTURE AND POROSITY FOR AERATION, AND TO LOWER THE MOISTURE CONTENT OF THE BIOMASS TO 60 PERCENT OR LESS. NUTRIENTS ARE ADDED AS NEEDED. FOLLOWING MIXING, THE AERATED PILE IS CONSTRUCTED AND POSITIONED OVER POROUS PIPE THROUGH WHICH AIR IS DRAWN OR BLOWN. THE PILE IS COVERED FOR INSULATION. AIR MONITORING DURING THE MIXING PROCESS WILL ASSURE THAT VOLATILE ORGANICS ARE NOT RELEASED ABOVE SAFE LEVELS.

THE AERATION PILE UNDERGOES DECOMPOSITION BY THERMOPHILIC ORGANISMS, WHOSE ACTIVITY GENERATES CONCOMITANT ELEVATION IN TEMPERATURE TO 60 DEGREES CENTIGRADE (140 DEGREES FAHRENHEIT) OR MORE. AEROBIC COMPOSTING CONDITIONS ARE MAINTAINED BY DRAWING AIR THROUGH THE PILE AT A PREDETERMINED RATE. THE EFFLUENT AIR STREAM IS CONDUCTED IN TO A SMALL PILE OF SCREENED, CURED COMPOST WHERE ODOROUS GASSES ARE EFFECTIVELY ABSORBED. AIR MONITORING WILL ASSURE THAT VOCS ARE NOT RELEASED AT UNACCEPTABLE LEVELS. AFTER ABOUT 21 DAYS, THE COMPOSTING RATES AND TEMPERATURES DECLINE, AND THE PILE IS TAKEN DOWN, THE PLASTIC PIPE IS DISCARDED, AND THE COMPOST IS EITHER DRIED OR CURED DEPENDING UPON WEATHER CONDITIONS. DRYING TO 40 TO 45 PERCENT MOISTURE FACILITATES CLEAN SEPARATION OF COMPOST FROM WOOD CHIPS. THE UNSCREENED COMPOST IS SPREAD OUT WITH A FRONT END LOADER TO A DEPTH OF 12 INCHES. PERIODICALLY A TRACTOR-DRAWN HARROW IS EMPLOYED TO FACILITATE DRYING. SCREENING IS PERFORMED WITH A ROTARY SCREEN. THE CHIPS ARE RECYCLABLE.

THE COMPOST IS STORED IN PILES FOR ABOUT 30 DAYS TO ASSURE NO OFFENSIVE ODORS REMAIN TO COMPLETE STABILIZATION. THE COMPOST IS THEN READY FOR UTILIZATION AS A LOW-GRADE FERTILIZER, A SOIL AMENDMENT, OR FOR LAND RECLAMATION.

TO LIMIT THE POSSIBILITY OF DEGRADATION OF THE AQUIFER AND SURROUNDING STREAMS, LEACHATE AND RUNOFF WILL BE DIVERTED TO A COLLECTION POND FOR SUBSEQUENT TREATMENT AND DISPOSAL.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

REMOVAL OF CONTAMINATED SOURCE MATERIAL AND REPLACEMENT WITH CLEAN FILL WOULD SUBSTANTIALLY REDUCE OR ELIMINATE EXPOSURE AND RISK POSED BY EXPOSURE TO HAZARDOUS COMPOUNDS.

IN ADDITION TO DECREASING RISKS POSED BY POTENTIAL DERMAL, INHALATION AND INGESTION EXPOSURE, REMOVAL OF THE SOURCE MATERIAL WOULD ALSO ADDRESS FUTURE GROUNDWATER CONTAMINATION BY ELIMINATING A SOURCE CONTAMINATION.

COMPLIANCE WITH ARARS

AIR MONITORING DURING MIXING AND AERATING OF THE COMPOST WILL PREVENT RELEASES IN ACCORDANCE WITH THE SUBSTANTIVE TECHNICAL REQUIREMENTS OF THE CLEAN AIR ACT 40 CFR PART 50 CONCERNING PARTICULATES AND VOLATILES EMISSIONS DURING EXCAVATION AND REMEDIATION ACTIVITIES.

TO BE CONSIDERED

THE STATE OF NORTH CAROLINA HAS PROPOSED NORTH CAROLINA AIR TOXIC REGULATIONS AS LISTED IN THE NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15, CHAPTER 2, SUBCHAPTER 2D. THESE WILL BE PROMULGATED IN THE FALL OF 1989. IF THESE ARE MORE STRINGENT THAN FEDERAL STANDARDS THESE WILL APPLY TO THE REMEDIAL ACTION.

LONG-TERM EFFECTIVENESS AND PERMANENCE

THE STATIC PILE METHOD OF COMPOSTING PERMANENTLY DESTROYS THE ORGANIC CONTAMINANTS. RESIDUALS AND NON-GRU CONTAMINATED MATERIALS' DISPOSAL AT A RCRA SUBTITLE C FACILITY IS LESS PERMANENT, SINCE FACILITY CONTAINMENT STRUCTURES ARE SUBJECT TO FAILURE. NO CONTAMINANTS WILL REMAIN ON-SITE ABOVE HEALTH-BASED LEVELS AFTER THE GROUNDWATER REMEDIATION (OU #1) IS COMPLETED.

REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

CONTAMINANTS IN THE GRU SLUDGES WILL BE DESTROYED.

MOBILITY AND VOLUME ARE NOT CONSIDERED TO BE REDUCED BY OFF-SITE CONTAINMENT; THESE EFFECTS CAN ONLY BE ACHIEVED BY TREATMENT.

SHORT-TERM EFFECTIVENESS

THE ALTERNATIVE POSES SIGNIFICANT SHORT TERM RISK DUE TO EXPOSURE FROM INHALATION OF CONTAMINANTS SINCE EXTENSIVE AERATION OF CONTAMINATED SOIL IS INVOLVED IN IMPLEMENTATION. THE RISK WOULD PERSIST UNTIL THE REMEDIAL ACTION IS COMPLETE.

IMPLEMENTABILITY

COMPOSTING IS A PROVEN TECHNOLOGY FOR MUNICIPAL SLUDGE; HOWEVER, ITS USE FOR HAZARDOUS OR INDUSTRIAL WASTE REMEDIATION IS LIMITED. BENCH SCALE TEST RESULTS ARE FAVORABLE. PILOT TESTING IS RECOMMENDED TO FULLY EVALUATE THIS TECHNOLOGY. INSTITUTIONAL ISSUES ASSOCIATED WITH THIS ALTERNATIVE ARE DISPOSITION OF RESIDUALS AND POSSIBILITY OF CONTAMINATED LEACHATE GENERATION DURING PROCESSING AND AFTER REBURIAL.

STATE AND COMMUNITY ACCEPTANCE

THIS OPTION MAY HAVE MORE PUBLIC ACCEPTANCE THAN INCINERATION SINCE IT PROVIDES FOR ON-SITE TREATMENT AND USES A TECHNOLOGY FAMILIAR TO THE PEOPLE.

COST EFFECTIVENESS

THE ESTIMATED COST OF THIS ALTERNATIVE, INCLUDING LEACHATE COLLECTION AND TREATMENT, IS APPROXIMATELY $3.2 MILLION. A COST BREAKDOWN IS PROVIDED IN APPENDIX IX OF THE FEASIBILITY STUDY REPORT.

8.2.7 COMPOSTING - WINDROW METHOD

DESCRIPTION

THIS ALTERNATIVE CONSIDERS COMPOSTING OF THE GRU MATERIAL AND OFF-SITE DISPOSAL OF THE STREAM SEDIMENTS, PLASTIC CHIP AND BURN PIT RESIDUALS AS DISCUSSED IN SECTION 8.2.1.

COMPOSTING IS THE MICROBIAL DEGRADATION OF THE WASTE MATERIAL BY AEROBIC METABOLISM IN PILES OR WINDROWS ON A SURFACED OUTDOOR AREA. IN THIS ALTERNATIVE, THE WINDROW METHOD IS CONSIDERED.

THE WINDROWS ARE TURNED PERIODICALLY TO PROVIDE OXYGEN FOR THE MICROORGANISMS TO CARRY OUT THE STABILIZATION AND TO CARRY OFF THE EXCESS HEAT THAT IS GENERATED BY THE PROCESS. NUTRIENTS AND WATER ARE ADDED AS NEEDED.

THE COMPOSTING PERIOD IS CHARACTERIZED BY RAPID DECOMPOSITION OF THE WASTE WITH AIR BEING SUPPLIED BY PERIODIC TURNINGS OF THE WINDROWS. THE REACTION IS EXOTHERMIC, AND WASTES REACH TEMPERATURES OF 140 DEGREES FAHRENHEIT TO 160 DEGREES FAHRENHEIT OR HIGHER. THE PERIOD OF DIGESTION IS NORMALLY ABOUT 6 WEEKS. THIS IS CHARACTERIZED BY A SLOWING OF THE DECOMPOSITION RATE, THE TEMPERATURE DROPS BACK TO AMBIENT, AND THE PROCESS IS BROUGHT TO COMPLETION.

AFTER THE DECOMPOSITION IS COMPLETED, THE COMPOSTING OPERATIONS ARE SIMILAR TO THOSE DESCRIBED FOR THE STATIC PILE METHOD IN SECTION 8.2.6.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THIS ALTERNATIVE IS A PERMANENT REMEDIAL ACTION FOR SOURCE MATERIAL. CONTAMINATED SOURCE MATERIAL WOULD BE REMOVED AND REPLACED WITH UNCONTAMINATED FILL. THE GRU MATERIAL WOULD BE TREATED VIA COMPOSTING, AND THE NON-GRU SOURCE MATERIAL WOULD BE DISPOSED OF OFF-SITE. REMOVAL OF CONTAMINATED SOURCE MATERIAL AND REPLACEMENT WITH UNCONTAMINATED FILL WOULD SUBSTANTIALLY REDUCE OF ELIMINATE EXPOSURE AND RISK POSED BY EXPOSURE TO HAZARDOUS COMPOUNDS. RISKS DUE TO SOIL EXPOSURE WOULD BE THOSE DUE TO THE BACKGROUND CONCENTRATIONS OF CHEMICALS PRESENT IN THE UNCONTAMINATED FILL.

IN ADDITION TO DECREASING RISKS POSED BY POTENTIAL DERMAL, INHALATION AND INGESTION EXPOSURE, REMOVAL OF THE SOURCE MATERIAL WOULD ALSO REMOVE CONTAMINANTS WHICH COULD BE RELEASED TO THE GROUNDWATER. THIS WOULD ADDRESS FUTURE GROUNDWATER CONTAMINATION BY ELIMINATING A SOURCE FOR CONTINUING CONTAMINATION.

COMPLIANCE WITH ARARS

AIR MONITORING DURING MIXING AND AERATING OF THE COMPOST WILL PREVENT RELEASES IN ACCORDANCE WITH THE SUBSTANTIVE TECHNICAL REQUIREMENTS OF THE CLEAN AIR ACT 40 CFR PART 50 CONCERNING PARTICULATES AND VOLATILES EMISSIONS DURING EXCAVATION AND REMEDIATION ACTIVITIES.

TO BE CONSIDERED

THE STATE OF NORTH CAROLINA HAS PROPOSED NORTH CAROLINA AIR TOXIC REGULATIONS AS LISTED IN THE NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15, CHAPTER 2, SUBCHAPTER 2D. THESE WILL BE PROMULGATED IN THE FALL OF 1989. IF THESE ARE MORE STRINGENT THAN FEDERAL STANDARDS THESE WILL APPLY TO THE REMEDIAL ACTION.

LONG-TERM EFFECTIVENESS AND PERMANENCE

THE WINDROW METHOD OF COMPOSTING PERMANENTLY DESTROYS THE ORGANIC CONTAMINANTS. RESIDUALS AND NON-GRU CONTAMINATED MATERIALS' DISPOSAL AT A RCRA SUBTITLE C FACILITY IS LESS PERMANENT, SINCE FACILITY CONTAINMENT STRUCTURES ARE SUBJECT TO FAILURE. NO CONTAINMENTS WILL REMAIN ON-SITE ABOVE HEALTH-BASED LEVELS AFTER THE GROUNDWATER REMEDIATION (OU #1) IS COMPLETED.

REDUCTION OF TOXICITY, MOBILITY AND VOLUME

CONTAMINANTS IN THE GRU SLUDGES WILL BE DESTROYED.

MOBILITY AND VOLUME ARE NOT CONSIDERED TO BE REDUCED BY OFF-SITE CONTAINMENT; THESE EFFECTS CAN ONLY BE ACHIEVED BY TREATMENT.

SHORT-TERM EFFECTIVENESS

THE ALTERNATIVE POSES SIGNIFICANT SHORT TERM RISK DUE TO EXPOSURE FROM INHALATION OF CONTAMINANTS SINCE EXTENSIVE AERATION OF CONTAMINATED SOIL IS INVOLVED IN IMPLEMENTATION. THE RISK WOULD PERSIST UNTIL THE REMEDIAL ACTION IS COMPLETE.

IMPLEMENTABILITY

COMPOSTING IS A PROVEN TECHNOLOGY FOR MUNICIPAL SLUDGE; HOWEVER, ITS USE FOR HAZARDOUS OR INDUSTRIAL WASTE REMEDIATION IS LIMITED. BENCH SCALE TEST RESULTS ARE FAVORABLE. PILOT TESTING IS RECOMMENDED TO FULLY EVALUATE THIS TECHNOLOGY.

INSTITUTIONAL ISSUES ASSOCIATED WITH THIS ALTERNATIVE ARE DISPOSITION OF RESIDUALS AND POSSIBILITY OF CONTAMINATED LEACHATE GENERATION DURING PROCESSING AND AFTER REBURIAL.

STATE AND COMMUNITY ACCEPTANCE

THIS ALTERNATIVE MAY HAVE MORE PUBLIC ACCEPTANCE THAN INCINERATION SINCE IT PROVIDES FOR ON-SITE TREATMENT AND USES TECHNOLOGY FAMILIAR TO PEOPLE.

COST EFFECTIVENESS

THE ESTIMATED COST OF THIS ALTERATIVE, INCLUDING LEACHATE COLLECTION AND TREATMENT, IS APPROXIMATELY $3.4 MILLION. A COST BREAKDOWN IS PROVIDED IN APPENDIX IX OF THE FEASIBILITY STUDY REPORT.

8.2.8 OFF-SITE LANDFILL DISPOSAL

DISPOSAL

THIS ALTERNATIVE WOULD ENTAIL EXCAVATION OF CONTAMINANT MASS AND CONTAMINATED SOILS, REPLACEMENT WITH CLEAN FILL AND REGRADING, AND TRANSPORT OF SOURCE MATERIAL TO A FULLY RCRA-COMPLIANT SECURE LANDFILL.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

REMOVAL OF SOURCE MATERIAL AND REPLACEMENT WITH CLEAN FILL WOULD SUBSTANTIALLY REDUCE OR ELIMINATE EXPOSURE AND RISK POSED BY EXPOSURE TO HAZARDOUS COMPOUNDS.

IN ADDITION TO DECREASING RISKS POSED BY POTENTIAL DERMAL, INHALATION AND INGESTION EXPOSURE, REMOVAL OF THE SOURCE MATERIAL WOULD ALSO REMOVE CONTAMINANTS WHICH COULD BE RELEASED TO THE GROUNDWATER. THIS WOULD ADDRESS FUTURE GROUNDWATER CONTAMINATION BY ELIMINATING A SOURCE FOR CONTINUING CONTAMINATION.

COMPLIANCE WITH ARARS

THIS ALTERNATIVE WOULD COMPLY WITH ARARS.

THE SUBSTANCES TRANSPORTED OFF-SITE FOR DISPOSAL IN A RCRA SUBTITLE C FACILITY ARE NOT RCRA LISTED OR RCRA CHARACTERISTIC WASTES. LANDBAN IS NOT ARAR. UNTIL THE EPA RULE-MAKING IS COMPLETED, THE CERCLA PROGRAM WILL NOT CONSIDER LANDBAN TO BE RELEVANT AND APPROPRIATE TO SOIL AND DEBRIS THAT DOES NOT CONTAIN RCRA RESTRICTED WASTES.

FACILITIES USED FOR OFF-SITE DISPOSAL ARE REQUIRED BY CERCLA SECTION 121 (5) TO BE IN COMPLIANCE WITH ALL PERTINENT RCRA REQUIREMENTS, THAT IS, TO HAVE RCRA PERMIT OR INTERIM STATUS AND HAVE AN ON-GOING CORRECTIVE ACTION FOR ANY SWMU (SOLID WASTE MANAGEMENT UNIT) RELEASES (THE SUPERFUND OFF-SITE POLICY PROVIDES GUIDANCE ON MEETING THIS REQUIREMENT).

LONG-TERM EFFECTIVENESS AND PERMANENCE

DISPOSAL OF CONTAMINATED MATERIAL AT A RCRA SUBTITLE C FACILITY IS NOT PERMANENT, SINCE FACILITY CONTAINMENT STRUCTURES ARE SUBJECT TO FAILURE. NO CONTAMINANTS WILL REMAIN ON-SITE ABOVE HEALTH-BASED LEVELS AFTER THE GROUNDWATER REMEDIATION (OU #1) IS COMPLETED.

REDUCTION OF TOXICITY, MOBILITY, AND VOLUME

TOXICITY, MOBILITY AND VOLUME ARE NOT CONSIDERED TO BE REDUCED BY OFF-SITE CONTAINMENT; THESE EFFECTS CAN ONLY BE PRODUCED BY TREATMENT.

SHORT-TERM EFFECTIVENESS

THIS ALTERNATIVE PROVIDES THE SAME SHORT TERM EFFECTIVENESS AS ALTERNATIVE 8.2.2, EXCEPT THE TRANSPORTATION OFF-SITE OF GRU SLUDGE MATERIALS INVOLVES MORE RISK THAN OFF-SITE TRANSPORTATION OF OTHER CONTAMINATED MATERIALS DUE TO THE HIGHER CONCENTRATION OF CARCINOGENS AND TOXIC CHEMICALS.

IMPLEMENTABILITY

THE IMPLEMENTABILITY AND FEASIBILITY OF THIS ALTERNATIVE'S COMPONENTS HAVE BEEN DISCUSSED PREVIOUSLY AS BEING GENERALLY RELIABLE AND ESTABLISHED TECHNOLOGIES.

STATE AND COMMUNITY ACCEPTANCE

THE INSTITUTIONAL ISSUES WITH THIS ALTERNATIVE ARE WHETHER THE SOURCE MATERIAL IS SUBJECT TO THE "LANDBAN." THIS ALTERNATIVE DOES NOT TREAT THE SOURCE, BUT MOVES IT TO ANOTHER SITE. HENCE, ITS ACCEPTABILITY IS NOT AS GREAT AS AN ALTERNATIVE WHICH TREATS OR DESTROYS AT LEAST A PORTION OF THE SOURCE.

COST EFFECTIVENESS

THE APPROXIMATE COST OF THIS ALTERNATIVE IS $1.9 MILLION. A COST BREAKDOWN IS INCLUDED IN APPENDIX IX OF THE FEASIBILITY STUDY REPORT.

9.0 SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

INCINERATION PROVIDES FOR THE BEST OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT FORM HAZARDOUS CONSTITUENTS OF THE GRU WASTES, SINCE THE CONTAMINANTS ARE DESTROYED. OFF-SITE DISPOSAL OF GRU WASTES IS PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT SINCE IT ELIMINATES THE POTENTIAL FOR EXPOSURE TO THE WASTE. WET AIR OXIDATION PROVIDES DESTRUCTION OF GRU CONTAMINANTS, BUT NOT TO THE SAME EXTENT AS INCINERATION SINCE WASTE STREAMS FROM THE PROCESS REQUIRE FURTHER TREATMENT. COMPOSTING REMOVES CONTAMINATION FROM THE SOIL PERMANENTLY AND DESTROYS SOME PART OF THE CONTAMINATION THROUGH BIOLOGICAL PROCESSES, BUT ALSO TRANSFERS ORGANIC CONTAMINANTS TO THE AIR THROUGH AERATION AND MIXING PROCESSES, WHICH MAY REPRESENT A HAZARD. COMPOSTING IS THEREFORE LESS PROTECTIVE THAN WET AIR OXIDATION, LANDFILLING, OR INCINERATION OPTIONS.

CHEMICAL FIXATION IS AT LEAST EQUALLY PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT AS OFF-SITE DISPOSAL OF NON-GRU WASTES, SINCE BOTH ELIMINATE POTENTIAL FOR EXPOSURE TO THE WASTE. CHEMICAL FIXATION MAY BE MORE PROTECTIVE, SINCE CONTAMINANTS MAY ACTUALLY BE RENDERED NON-HAZARDOUS. THIS EFFECT HAS NOT BEEN CONFIRMED FOR ORGANIC CONSTITUENTS.

COMPLIANCE WITH ARARS

ALL ALTERNATIVES COMPLY WITH ARARS. NO ALTERNATIVE REQUIRES AN ARAR WAIVER.

LONG-TERM EFFECTIVENESS AND PERMANENCE

INCINERATION PROVIDES FOR THE BEST LONG-TERM EFFECTIVENESS AND PERMANENCE SINCE THE GRU WASTES ARE DESTROYED. WET AIR OXIDATION PROVIDES FOR DESTRUCTION OF MOST OF THE GRU WASTES, BUT SUBSEQUENT PROCESS WASTE STREAM TREATMENT MAY BE LESS EFFECTIVE, THEREFORE LESS PERMANENT. OFF-SITE DISPOSAL OF GRU WASTES PROVIDES LONG-TERM EFFECTIVENESS IN ISOLATING WASTES, BUT CONTAINMENT STRUCTURES MAY BE SUBJECT TO FAILURE, SO THAT THIS ALTERNATIVE IS LESS PERMANENT THAN INCINERATION OR WET AIR OXIDATION. COMPOSTING PROVIDES FOR PARTIAL DESTRUCTION OF WASTES, BUT ALSO TRANSFERS CONTAMINANTS TO THE AIR, PROVIDING LESS EFFECTIVENESS AND LESS PERMANENCE IN CONTAINING OR ELIMINATING CONTAMINANTS THAN OTHER ALTERNATIVES.

CHEMICAL FIXATION PROVIDES GOOD LONG-TERM EFFECTIVENESS AND MAY PROVIDE A MORE PERMANENT REMEDY THAN CONTAINMENT IF THE MATRIX IS SHOWN TO PERMANENTLY ALTER THE CONTAMINANTS. FIELD DATA IS NOT AVAILABLE; HOWEVER, PERFORMANCE TESTING PREDICTS GOOD LONG-TERM EFFECTIVENESS AND PERMANENCE. CONTAINMENT OF NON-GRU WASTES PROVIDES LONG-TERM EFFECTIVENESS IN ISOLATING WASTES, BUT CONTAINMENT STRUCTURES MAY BE
SUBJECT TO FAILURE, POTENTIALLY PROVIDING LESS PERMANENCE.

REDUCTION OF MOBILITY, TOXICITY, OR VOLUME

INCINERATION DESTROYS THE CONTAMINANTS, THEREBY ELIMINATING TOXICITY AND MOBILITY, AND REDUCING VOLUME. WET AIR OXIDATION ALSO DESTROYS THE MAJORITY OF THE CONTAMINATION, BUT SUBSEQUENT PROCESS STREAM TREATMENT MAY OR MAY NOT RESULT IN REDUCTION OF TOXICITY, MOBILITY, OR VOLUME. COMPOSTING PROVIDED FOR PARTIAL DESTRUCTION OF CONTAMINANTS, BUT INCREASES MOBILITY OF THE CONTAMINANTS THROUGH THE AIR EXPOSURE PATHWAY. OFF-SITE DISPOSAL OF GRU WASTES DOES NOT AFFECT THE INHERENT TOXICITY, MOBILITY, OR VOLUME OF THE WASTE.

CHEMICAL FIXATION MAY ALTER THE NON-GRU WASTE CONTAMINANTS, DESTROYING TOXICITY. IT INCREASES VOLUME DUE TO THE ADDITIONAL VOLUME OF THE ADMIXTURE; AND IT ELIMINATES THE MOBILITY OF THE WASTE. OFF-SITE DISPOSAL OF GRU WASTES DOES NOT AFFECT THE INHERENT TOXICITY, MOBILITY, OR VOLUME OF THE WASTE.

SHORT-TERM EFFECTIVENESS

ALL ALTERNATIVES REQUIRE EXCAVATION OF GRU WASTES AND HAVE SHORT-TERM IMPACTS ON THE ENVIRONMENT DUE TO THE RELEASE OF ORGANIC CONTAMINANTS (VOCS) INTO THE AIR. COMPOSTING ALTERNATIVES HAVE GREATER AIR EFFECTS DURING IMPLEMENTATION SINCE THE WASTE IS EFFECTIVELY UNDERGOING AERATION. THE WINDROW ALTERNATIVE WOULD DISTRIBUTE EMISSIONS OVER A LARGER AREA AS DESCRIBED, WHILE THE STATIC PILE METHOD MAY CONTROL RELEASE THROUGH ABSORPTION BY THE COMPOST MATERIAL USED AS AIR FILTER, OR MAY RESULT IN A MORE CONCENTRATED RELEASE AT THE AERATION OUTLET. INCINERATION MAY HAVE SHORT-TERM IMPACTS DUE TO INCINERATION EMISSIONS.

OFF-SITE DISPOSAL OF GRU WASTES OR OFF-SITE INCINERATION OF THESE WASTES INVOLVES TRANSPORTATION OF THE WASTE, INCREASING SHORT-TERM RISK TO POPULATIONS ALONG THE TRANSPORT ROUTE.

OFF-SITE DISPOSAL OF NON-GRU WASTES INVOLVE TRANSPORTATION OF THE WASTE, ALSO INCREASING SHORT-TERM RISK TO POPULATIONS ALONG THE TRANSPORT ROUTE. CHEMICAL FIXATION OF THE WASTES WOULD HAVE SHORT-TERM RISKS DUE TO POTENTIAL AIR EMISSIONS DURING THE MIXING PROCESS.

IMPLEMENTABILITY

INCINERATION IS A PROVEN TECHNOLOGY. ON-SITE INCINERATION IS SUBJECT TO SUBSTANTIVE BUT NOT TO ADMINISTRATIVE REQUIREMENTS, AND IS FULLY IMPLEMENTABLE. OFF-SITE INCINERATION MAY BE DIFFICULT TO IMPLEMENT DUE TO AVAILABILITY OF INCINERATOR CAPACITY IN SOUTH CAROLINA. WET AIR OXIDATION REQUIRES DILUTION OF THE GRU WASTES TO MEET PROCESSING REQUIREMENTS BUT FULLY IMPLEMENTABLE. COMPOSTING WOULD REQUIRE PILOTING PRIOR TO FULL IMPLEMENTATION. OFF-SITE DISPOSAL OF GRU OR NON-GRU WASTES IS IMPLEMENTABLE.

CHEMICAL FIXATION IS ALSO IMPLEMENTABLE AT THE SITE FOR NON-GRU WASTES.

COST-EFFECTIVENESS

DETAILED ESTIMATED COSTS ARE AS FOLLOWS:

ON-SITE INCINERATION W/OFF-SITE DISPOSAL OF RESIDUALS AND NON-GRU WASTES$3.7M

OFF-SITE INCINERATION AND OFF-SITE DISPOSAL OF RESIDUALS AND NON-GRU WASTES$3.9M

ON-SITE INCINERATION AND CHEMICAL FIXATION OF RESIDUALS AND NON-GRU WASTES$3.5M

WET AIR OXIDATION W/OFF-SITE DISPOSAL OF RESIDUALS AND NON-GRU WASTES$6.4M

COMPOSTING-STATIC PILE METHOD $3.2M

COMPOSTING-WINDROW METHOD$3.4M

OFF-SITE LANDFILL DISPOSAL $1.9M

THE WET AIR OXIDATION ALTERNATIVE DOES NOT PROVIDE THE SAME BENEFIT AS THE INCINERATION OPTIONS, YET IS MORE EXPENSIVE, SO THAT IT IS NOT A COST-EFFECTIVE ALTERNATIVE.

OFF-SITE LANDFILLING IS THE CHEAPEST ALTERNATIVE, BUT DOES NOT PROVIDE FOR TREATING THE WASTE, AND DOES NOT PROVIDE THE BENEFITS OF OTHER ALTERNATIVES IN TERMS OF PROTECTIVENESS, LONG TERM EFFECTIVENESS, OR PERMANENCE. THE BENEFITS PROVIDED BY THE OTHER ALTERNATIVES AS COMPARED TO THIS CONTAINMENT ALTERNATIVE JUSTIFY ADDITIONAL EXPENDITURE. THEREFORE OFF-SITE LANDFILLING IS NOT THE MOST COST-EFFECTIVE ALTERNATIVE.

THE COMPOSTING ALTERNATIVES ARE LESS EXPENSIVE THAN THE INCINERATION ALTERNATIVES AND PROVIDE SIMILAR BENEFIT, BUT ON A LESSER SCALE. THE PRICING OF THE COMPOSTING ALTERNATIVES HAVE NOT INCLUDED COSTS FOR AIR MONITORING OR FOR EMISSION CONTROL, SHOULD THAT BE NECESSARY. THE COST DIFFERENTIAL BETWEEN INCINERATION, WHICH ASSURES MAXIMUM BENEFIT, DOES NOT MAKE COMPOSTING MORE COST-EFFECTIVE. THE COMPOSTING ALTERNATIVES ARE LESS COST-EFFECTIVE THAN THE INCINERATION ALTERNATIVES.

THE ON-SITE INCINERATION WITH CHEMICAL FIXATION OF RESIDUALS ALTERNATIVE IS THE LEAST EXPENSIVE INCINERATION ALTERNATIVE ACCORDING TO THE FS COST ESTIMATES; HOWEVER, THE INCINERATION ALTERNATIVES DO NOT DIFFER GREATLY IN COST. THE ON-SITE INCINERATION AND CHEMICAL FIXATION ALTERNATIVE IS MORE COST-EFFECTIVE THAN THE OTHER INCINERATION ALTERNATIVES PRIMARILY BECAUSE IT PROVIDES MUCH GREATER BENEFIT FOR COMPARABLE COST. LONG-TERM EFFECTIVENESS, PERMANENCE, AND PROTECTIVENESS ARE IMPROVED, SHORT-TERM RISKS ARE REDUCED, GREATER REDUCTION OF TOXICITY, MOBILITY, AND VOLUME IS ACHIEVED AND IMPLEMENTABILITY IS GREATER THAN FOR OFF-SITE INCINERATION.

STATE ACCEPTANCE

THE STATE OF NORTH CAROLINA HAS CONCURRED WITH THE SELECTED ALTERNATIVE.

COMMUNITY ACCEPTANCE

THREE CITIZENS ATTENDED THE PUBLIC MEETING. THEY VOICED CONCERNS OVER THE SELECTED REMEDY BUT WERE SATISFIED WITH THE AGENCY'S RESPONSE. THE ONLY WRITTEN COMMENTS RECEIVED BY THE AGENCY DURING THE PUBLIC COMMENT PERIOD WERE SUBMITTED BY HOECHST-CELANESE. THESE WERE ADDRESSED IN THE RESPONSIVENESS SUMMARY.

10.0 SELECTED REMEDY

THE REMEDY SELECTED FOR SOURCE CONTROL AT THE SITE IS:

- EXCAVATION OF GLYCOL RECOVERY UNIT (GRU) SLUDGES, PLASTIC CHIPS, BURN PIT RESIDUALS AND STREAM SEDIMENTS.

- INCINERATION ON-SITE OF CONTAMINATED SOILS AND GRU SLUDGES.

- CHEMICAL FIXATION (SOLIDIFICATION) OF INCINERATOR ASH; PLASTIC CHIPS, BURN PIT RESIDUALS AND STREAM SEDIMENTS.
- ON-SITE DISPOSAL OF INERT, SOLIDIFIED MATERIAL.
- REGRADING
- MONITORING

THIS REMEDY WILL ATTAIN A 10(6) CANCER RISK LEVEL AS IT REMOVES THE SOURCE OF THE GROUNDWATER CONTAMINATION. THIS RISK LEVEL WAS ESTABLISHED IN THE OPERABLE UNIT ONE (GROUNDWATER REMEDIATION) ROD.

11.0 STATUTORY DETERMINATIONS

THE SELECTED REMEDY SATISFIES THE REQUIREMENTS OF SECTION 121 OF CERCLA.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

THE SELECTED REMEDY WILL PERMANENTLY DESTROY GRU SLUDGE CONTAMINANTS AND WOULD REMOVE OR MINIMIZE THE POTENTIAL RISKS ASSOCIATED WITH THE MATERIAL TO BE CHEMICALLY FIXED. DERMAL, INGESTION, AND INHALATION CONTACT WITH SITE CONTAMINANTS WOULD BE ELIMINATED, AND RISKS POSED BY CONTINUED GROUNDWATER CONTAMINATION WOULD BE REDUCED.

ATTAINMENT OF ARARS

THIS ALTERNATIVE WILL COMPLY WITH ARARS.

THE GRU SLUDGES WOULD BE TREATED ON-SITE IN ACCORDANCE WITH RCRA 40 CFR SUBPART O WHICH APPLIES TO THE MOBILIZATION, OPERATION, AND CLOSING OF THERMAL DESTRUCTION UNITS. THESE REQUIREMENTS, THOUGH NOT APPLICABLE, HAVE BEEN DETERMINED TO BE RELEVANT AND APPROPRIATE DUE TO THE SIMILARITY OF THE WASTES BEING MANAGED AND THE ACTIONS BEING TAKEN. SPECIFIC OPERATING PRACTICES NECESSARY TO MEET THE PERFORMANCE OBJECTIVES WOULD BE DETERMINED THROUGH A TRIAL BURN AT THE SITE AFTER THE INSTALLATION OF THE ROTARY KILN.

THIS ALTERNATIVE WOULD COMPLY WITH THE SUBSTANTIVE TECHNICAL REQUIREMENT OF THE CLEAN AIR ACT 40 CFR PART 50 CONCERNING PARTICULATES AND VOLATILES EMISSIONS DURING EXCAVATION.

BECAUSE FIXATION WOULD RESULT IN A VOLUME INCREASE, AND WOULD OCCUPY A LARGER AREA OF THE SITE, ANY LATERAL EXTENSION OF THE WASTE DISPOSAL AREA WOULD REQUIRE THAT THE ENTIRE DISPOSAL AREA COMPLY WITH RCRA 40 CFR 264.228 AND 40 CFR 264.221, WHICH ARE RELEVANT AND APPROPRIATE. VERTICAL EXTENSIONS OF THE WASTE MONOLITH DO NOT CREATE A NEW WASTE MANAGEMENT AREA, SO 40 CFR 264.228 AND 264.221 ARE NOT ARAR IN THIS CASE.

THE STATE OF NORTH CAROLINA HAS PROPOSED NORTH CAROLINA AIR TOXIC REGULATIONS AS LISTED IN THE NORTH CAROLINA ADMINISTRATIVE CODE, TITLE 15, CHAPTER 2, SUBCHAPTER 2D ARE TO BE CONSIDERED. THESE WILL BE PROMULGATED IN THE FALL OF 1989 AND THEREFORE MAY BE IN PLACE PRIOR TO INITIATION OF THE REMEDIAL ACTION. IF THESE ARE MORE STRINGENT THAN FEDERAL STANDARDS THESE WILL APPLY TO THE REMEDIAL ACTION.

COST-EFFECTIVENESS

THE ON-SITE INCINERATION AND CHEMICAL FIXATION ALTERNATIVE IS MORE COST-EFFECTIVE THAN THE OTHER INCINERATION ALTERNATIVES PRIMARILY BECAUSE IT PROVIDES MUCH GREATER BENEFIT FOR COMPARABLE COST. LONG-TERM EFFECTIVENESS, PERMANENCE, AND PROTECTIVENESS ARE IMPROVED, SHORT-TERM RISKS ARE REDUCED, GREATER REDUCTION OF TOXICITY, MOBILITY, AND VOLUME IS ACHIEVED, AND IMPLEMENTABILITY IS GREATER THAN FOR OFF-SITE INCINERATION.

UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT TECHNOLOGIES OR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE.

THE ON-SITE INCINERATION AND CHEMICAL FIXATION ALTERNATIVE REPRESENTS THE MAXIMUM EXTENT TO WHICH PERMANENT SOLUTIONS AND TREATMENT CAN BE PRACTICABLY UTILIZED FOR THIS ACTION. INCINERATION WILL PERMANENTLY DESTROY GRU SLUDGE CONTAMINANTS SOLIDIFICATION OR CHEMICAL FIXATION HAVE BEEN SHOWN TO BE MORE PERMANENT DEMOBILIZATION SOLUTIONS THAN CONTAINMENT ALONE.

PREFERENCE FOR TREATMENT AS A PRINCIPAL ELEMENT

THE PREFERENCE FOR TREATMENT IS SATISFIED BY THE USE OF ROTARY KILN INCINERATION AND CHEMICAL FIXATION AT THE SITE. THE PRINCIPAL THREATS AT THE SITE WILL BE MITIGATED BY USE OF THESE TREATMENT TECHNOLOGIES.

RESPONSIVENESS SUMMARY

I. OVERVIEW

AT THE TIME OF THE PUBLIC MEETING AND THE BEGINNING OF THE PUBLIC COMMENT PERIOD, EPA PRESENTED ITS PREFERRED ALTERNATIVE TO THE PUBLIC.

THIS ALTERNATIVE SPECIFIED IN THE RECORD OF DECISION (ROD) INCLUDES: ON-SITE INCINERATION OF THE CPU SLUDGES AND CONTAMINATED SOILS; AND SOLIDIFICATION OF THE INCINERATOR ASH, BURN PIT RESIDUALS, PLASTIC CHIP, AND CONTAMINATED SEDIMENTS. THE SOLIDIFIED MATERIAL WILL BE DISPOSED OF ON-SITE.

THE COMMUNITY FAVORS REMEDIAL ACTION THOUGH FEW CITIZENS EXPRESSED A PREFERENCE FOR A PARTICULAR PROCESS.

II. HISTORY OF COMMUNITY CONCERNS

CITIZENS OF THE EARL/SHELBY AREA HAVE EXPRESSED GREAT INTEREST IN ACTIVITIES RELATING TO THE CELANESE FIBERS OPERATIONS SITE. THE CITIZENS OF EARL, NORTH CAROLINA, WITH THE ASSISTANCE OF DIANA TRAVIS AND OTHER STAFF MEMBERS OF THE CLEAN WATER FUND OF NORTH CAROLINA, ORGANIZED THE UNITED NEIGHBORS FOR CLEANUP AT EARL BECAUSE OF THEIR CONCERN ABOUT THE QUALITY OF WATER FOR THEIR FAMILIES. LES BROWN, CONSERVATION CHAIR OF THE BROAD RIVER SIERRA GROUP OF BOILING SPRINGS, HAS ALSO EXPRESSED AN INTEREST IN THE SITE. MANY NEWSPAPER ARTICLES HAVE BEEN WRITTEN BY DONNA CLEMMER OF THE SHELBY STAR CONCERNING CONTAMINATION AT THE SITE.

III. SUMMARY OF PUBLIC COMMENTS RECEIVED DURING PUBLIC COMMENT PERIOD AND AGENCY RESPONSES

COMMENTS RAISED DURING THE FEBRUARY 16, 1989 CELANESE PUBLIC MEETING ARE SUMMARIZED BRIEFLY BELOW:

JON JOHNSTON, CHIEF OF THE EPA REGION IV NORTH CAROLINA/SOUTH CAROLINA CERCLA UNIT, ENCOURAGED AUDIENCE MEMBERS TO EXPRESS ANY COMMENTS OR QUESTIONS THEY HAD. HE STRESSED THAT THE REMEDIAL ALTERNATIVE SELECTED FOR THE SITE IS PROPOSED AND NOT FINAL. HE ALSO STATED THAT CITIZENS WERE WELCOMED TO SUBMIT COMMENTS IN WRITING OR, IF THEY WISHED TO CONTACT EPA BY TELEPHONE, EPA STAFF WOULD SAVE THEM THE COST OF A LONG- DISTANCE PHONE CALL BY TAKING THEIR NUMBER AND IMMEDIATELY RETURNING THE CALL.

THE QUESTIONS RAISED BY ONE AUDIENCE MEMBER RELATED TO THE PERFORMANCE OF THE INCINERATOR AND CONCERN ABOUT AIR QUALITY PROTECTION. THESE QUESTIONS AND THEIR ACCOMPANYING RESPONSES ARE PARAPHRASED BELOW AND REPORTED VERBATIM IT THE PUBLIC MEETING TRANSCRIPT.

Q/COMMENT - I WOULD LIKE TO KNOW ABOUT THE GASES THAT THE INCINERATOR WILL PRODUCE.

A - ONE OF THE THINGS THAT EPA EVALUATES IN ANY PROPOSED INCINERATION PROJECT OR ONE THAT WE ARE IMPLEMENTING, IS THE DESTRUCTION AND REMOVAL EFFICIENCY OF THAT INCINERATOR UNIT. WE DO THIS THROUGH TRIAL BURNS IN WHICH THE INCINERATOR HAS TO MEET VERY STRINGENT STANDARDS SO THAT ANY GASES THAT ARE RELEASED ARE NOT TOXIC TO THE SURROUNDING COMMUNITY. WE ARE TALKING ABOUT THE DEMONSTRATION OF A REMOVAL EFFICIENCY OF 99.9999 PERCENT OF ANY HAZARDOUS ELEMENTS IN THE WASTE TO BE INCINERATED, PRIOR TO ACTUAL ON-LINE OPERATION OF THE INCINERATOR. YOUR CONCERN ABOUT THE

GASSES IS ONE THAT EPA SHARES; WE ARE VERY SENSITIVE ABOUT MAKING SURE THAT WE DO NOT MOVE A PROBLEM FROM ONE MEDIUM TO ANOTHER, FOR EXAMPLE, FROM THE SOIL TO THE AIR. WE DO BELIEVE THAT WITH CAREFUL OPERATION AND MONITORING OF THE INCINERATOR, WE CAN ENSURE THAT THIS WILL NOT OCCUR.

Q - WHOSE REGULATIONS/STANDARDS ARE THOSE?

A - BOTH EPA AND STATE REGULATIONS FOR THE DESTRUCTION AND REMOVAL EFFICIENCY FOR THE STACK GASSES THAT ARE EMITTED. YOU HEARD THE TERM ARARS, OR APPLICABLE OR RELEVANT AND APPROPRIATE STANDARDS, MENTIONED EARLIER; IN THIS CASE AIR EMISSION STANDARDS AND DESTRUCTION AND REMOVAL EFFICIENCY ARE ARARS.

COMMENT - I THOUGHT NORTH CAROLINA'S AIR SAFETY STANDARDS WERE PRACTICALLY NONEXISTENT.

A - WE WILL FOLLOW THE MORE STRINGENT STANDARD, IN THIS CASE EPA'S, AS THE APPLICABLE REGULATION.

Q - IS THERE A PROBLEM WITH BUILDING AN INCINERATOR, OR DOES IT HAVE TO BE LICENSED?

A - ISSUANCE OF A PERMIT OR LICENSE WILL NOT BE NECESSARY BECAUSE THE PROPOSED INCINERATOR IS TO BE NEITHER A COMMERCIAL FACILITY WHICH WOULD ACCEPT OFF-SITE WASTE, NOR IS IT TO BE PERMANENT. ALTHOUGH IT WILL NOT BE HANDLED AS A PERMITTING OR LICENSING ACTION, THE FACILITY WILL, HOWEVER, HAVE TO MEET THE TECHNICAL REQUIREMENTS OF FEDERAL AND STATE REGULATIONS.

COMMENT - THERE IS SO MUCH TURMOIL IN NORTH CAROLINA RIGHT NOW CONCERNING THE SITTING OF INCINERATORS AROUND THE STATE. MANY COUNTIES ARE REJECTING THEM; THEY DO NOT WANT INCINERATORS AS ECONOMIC ENTERPRISES AND HERE WE ARE ABOUT TO HAVE A PRIVATE ONE RIGHT IN OUR OWN COMMUNITY.

RESPONSE - WE ARE WELL AWARE OF NORTH CAROLINA'S SITUATION AND IT IS ONE THAT IS NOT UNIQUE TO THIS STATE. WE DO SEE A DIFFERENCE IN THIS CASE, HOWEVER, BETWEEN PERMITTING A LONG-TERM, PERMITTED, COMMERCIAL INCINERATOR FACILITY AND A SHORT-TERM INCINERATOR TO DEAL WITH A SPECIFIC PROBLEM FOR A SPECIFIC TIME. WHEN THE PROBLEM IS RESOLVED, THE INCINERATOR WILL BE MOVED; IT IS A MOBILE UNIT, NOT A DEDICATED FACILITY.

THE CONGRESS HAS CHOSEN TO MANDATE THAT, WHEREVER POSSIBLE, EPA IS TO ADDRESS PROBLEMS CREATED BY SUPERFUND SITES WHERE THOSE PROBLEMS ARE LOCATED. IN OTHER WORDS, IF WE CAN DEAL WITH THEM ON-SITE, WE ARE TO DO SO. ALTHOUGH WE ARE AWARE OF THE CONCERN ABOUT INCINERATION THROUGHOUT NORTH CAROLINA, WE HAVE BEEN TOLD CLEARLY BY THE CONGRESS TO DEAL WITH THIS PROBLEM IN A FORTHRIGHT MANNER ON-SITE IF WE CAN. YOURS IS THE KIND OF COMMENT, HOWEVER, THAT IS APPROPRIATE FOR US TO RECEIVE DURING THE PUBLIC COMMENT PERIOD AND CONSIDER.

NO OTHER QUESTIONS OR COMMENTS WERE EXPRESSED AT THE MEETING. FOR FURTHER DETAIL AND CLARIFICATION ON ALL COMMENTS RAISED DURING THE MEETING, INTERESTED PERSONS CAN REFER TO THE PUBLIC MEETING TRANSCRIPT.

THE COMMENT PERIOD ON THE FEASIBILITY STUDY STARTED ON FEBRUARY, 16, 1989 (THE DAY OF THE PUBLIC MEETING) AND CLOSED ON MARCH 9, 1989. THE ONLY COMMENTS RECEIVED WERE FROM HOECHST CELANESE ON THE AGENCY'S PREFERRED ALTERNATIVE. IT SHOULD BE NOTED THE PREFERRED ALTERNATIVE WAS TAKEN DIRECTLY FROM THE DRAFT FEASIBILITY STUDY REPORT DEVELOPED BY S&ME FOR CELANESE. THE FOLLOWING COMMENTS ARE PORTIONS OF THE LETTER SUBMITTED BY HOECHST CELANESE. THE LETTER IN ITS ENTIRETY IS INCLUDED AS PART OF THE ADMINISTRATIVE RECORD AT THE SITE. THE MAJOR COMMENTS FROM THE LETTER ARE AS FOLLOWS:

1. COMMENT

SUMMARY

BASED ON THE FINDINGS OF THE RI REPORT AND EXPANDED CHARACTERIZATION STUDY, IT WAS DETERMINED THAT THERE WERE 1800 CUBIC YARDS OF GRU/DIRT MATERIAL, 1800 CUBIC YARDS OF BURN PIT RESIDUES AND SOILS, AND 110 CUBIC YARDS OF STREAM SEDIMENTS REQUIRING REMEDIATION AT OUR SITE. THE FS REPORT

PRESENTED SEVERAL REMEDIAL OPTIONS TO THESE SOURCE MATERIALS, WITH INCINERATION OF THE GRU MATERIAL (THE MAJOR SOURCE OF ORGANIC CONTAMINATION) APPEARING TO BE THE MOST AMENABLE APPROACH TO REMEDIATION. THE FS, HOWEVER, DID NOT CLEARLY DEPICT WHETHER ON-SITE OR OFF-SITE WAS MORE VIABLE. BECAUSE OF THIS, HOECHST CELANESE BEGAN TO CLOSELY EXAMINE ON-SITE/OFF-SITE INCINERATION AND REQUESTED BUDGETARY ESTIMATES FROM SEVERAL HAZARDOUS MATERIAL RESPONSE AND DISPOSAL OPERATIONS. BASED ON THIS EXAMINATION, OFF-SITE INCINERATION OF THE GRU/DIRT MATERIAL AND OFF-SITE LANDFILLING OF THE BURN PIT RESIDUES, SOILS AND STREAM SEDIMENTS ARE THE MOST BENEFICIAL APPROACHES TO REMEDIATION AT THE HOECHST CELANESE - SHELBY SITE.

RECOMMENDATION

INCINERATION OF THE GRU/DIRT MATERIAL IS AN AMENABLE PROVEN TECHNOLOGY AND PROVIDES A PERMANENT SOLUTION IN THAT ALL ORGANIC COMPONENTS ARE DESTROYED. DISPOSAL OF THE BURN PIT RESIDUES, SOILS AND STREAM SEDIMENTS AT A SECURE HAZARDOUS WASTE LANDFILL IS RECOMMENDED AS THESE MATERIALS ARE NOT TECHNICALLY AMENABLE TO THERMAL TREATMENT AND THE ORGANIC CONTENT IS RELATIVELY LOW. MORE IMPORTANTLY, THE OFF-SITE DISPOSAL BENEFITS OVER ON-SITE ARE BELIEVED TO BE CRITICAL TO THE TIMELY AND POSITIVE EXECUTION OF THIS ACTION. THESE BENEFITS ARE: 1) TIMELY START AND COMPLETION, 2) POSITIVE COMMUNITY ACCEPTANCE, 3) DISPOSAL OCCURS AT AN ESTABLISHED AND PROFICIENT FACILITY, 4) MINIMAL DELAY CAUSING VARIABLES, AND 5) IT IS MORE ECONOMICAL.

EPA RESPONSE

THE AGENCY AGREES INCINERATION OF THE GRU/DIRT MATERIAL IS THE MOST VIABLE ALTERNATIVE. HOWEVER, BASED ON THE ANALYSIS PROVIDED IN THIS ROD, THE AGENCY BELIEVES ON-SITE INCINERATION WITH SOLIDIFICATION OF THE INCINERATOR ASH AND OTHER CONTAMINATED MATERIALS IS THE MOST EFFECTIVE
ALTERNATIVE FOR THIS SITE.

FOR PURPOSES OF DISCUSSION, EACH BENEFIT IDENTIFIED IN THE COMPANY'S RECOMMENDATION IS PRESENTED SEPARATELY, AND THE AGENCY'S RESPONSE FOLLOWS:

2. IT IS EXPECTED THAT OFF-SITE INCINERATION AND OFF-SITE LANDFILLING COULD BE INITIATED WITHIN THREE MONTHS AFTER THE ROD IS APPROVED. THE ONLY POTENTIAL REGULATORY REQUIREMENT IS TSD STATE APPROVAL, AND SHOULD PRESENT LITTLE PROBLEM BASED ON THE ANALYSES OF THE DISPOSAL MATERIALS. THE TIME TO COMPLETE THE EXCAVATION AND SHIP ALL THE SOURCE MATERIALS TO OFF-SITE FACILITIES WOULD PROBABLY BE LESS THAN 6 TO 12 MONTHS BASED ON DISCUSSIONS WITH TSD FACILITIES AND HAZARDOUS MATERIAL RESPONSE OPERATIONS.

THE TIME FRAME FOR ON-SITE INCINERATION OF THE GRU/DIRT MATERIAL AND ON-SITE FIXATION OF THE NON-GRU MATERIALS AND ASH IS MUCH MORE VARIABLE AND COULD TAKE UP TO 30 MONTHS TO COMPLETE, ASSUMING A CONTRACT MOBILE INCINERATOR IS AVAILABLE FOR THE SITE. IT IS ANTICIPATED TO TAKE AT LEAST A YEAR TO MOBILIZE AN INCINERATOR AND COMPLETE ALL PERMITTING REQUIREMENTS, INCLUDING TEST BURNS AND ANALYTICAL EVALUATION OF THE OFF-GASSES. AFTER THE INCINERATION PORTION OF THE PROJECT IS COMPLETE, THE ASH AND NON-GRU MATERIALS WOULD HAVE TO BE ENCAPSULATED USING ADDITIONAL EQUIPMENT BROUGHT ON-SITE; THIS WOULD PROBABLY ACCOUNT FOR 5 TO 6 MONTHS OF THE JOB DURATION ASSUMING EXTENSIVE ANALYTICAL EVALUATIONS ARE NOT REQUIRED.

THE TIMELINESS OF OFF-SITE INCINERATION OVER ON-SITE IS IN KEEPING WITH THE PRESIDENT'S SUPERFUND IMPROVEMENT PROGRAM REQUESTING FASTER CLEAN-UPS OF CERCLA SITES.

EPA RESPONSE: THE TIME FRAME GIVEN FOR ON-SITE INCINERATION IS UNREALISTIC. SOME SMALL QUANTITY INCINERATORS CAN BE MOBILIZED IN AS LITTLE AS TWO DAYS. INCINERATION OF THE GRU SLUDGES WOULD TAKE APPROXIMATELY THREE MONTHS. THE SOLIDIFICATION OF THE ASH AND OTHER CONTAMINATED MATERIALS SHOULD REQUIRE NO MORE THAN A MONTH INCLUDING MOBILIZATION. SOLIDIFICATION AT ANOTHER SUPERFUND SITE REQUIRED ONLY TWO MONTHS FROM MOBILIZATION TO DE-MOBILIZATION IN SOLIDIFYING MORE THAN 6,600 CUBIC YARDS OF MATERIAL. CONSIDERING THIS MATERIAL HAS BEEN IN PLACE FOR APPROXIMATELY 30 YEARS AND THE EXTRACTION WELLS ARE SITUATED IN SUCH A WAY AS TO INTERCEPT CONTAMINANTS MIGRATING FROM THE SOURCE, TIMELINESS IN THIS CONTEXT IS NOT A SERIOUS CONCERN.

3. NEIGHBORHOOD IMPACT: BECAUSE OFF-SITE REMEDIATION CAN BE ACCOMPLISHED MUCH MORE QUICKLY THAN ON-SITE, THE COMMUNITY IMPACT WITH RESPECT TO POSSIBLE AIR EMISSIONS, NOISE, AND ODORS FROM EXCAVATED AREAS WILL BE MUCH LESS. THE POTENTIAL RISK FOR CONTAMINANT RELEASE DUE TO OFF-SITE TRANSPORTATION ACCIDENTS IS MINIMAL CONSIDERING THE CHARACTERISTICS OF THE SOURCE MATERIALS AND THE USE OF LICENSED HAZARDOUS WASTE TRANSPORTERS.

THE NOISE ASSOCIATED WITH THE ON-SITE OPERATION OF AN INCINERATOR WOULD BE 24 HOURS AROUND THE CLOCK, AS THE OPERATION CANNOT BE EASILY STARTED AND STOPPED. IN ADDITION, THE REBURYING OF ENCAPSULATED RESIDUALS MAY NOT BE PERCEIVED BY THE COMMUNITY AS AN ADEQUATE ELIMINATION OF THE CONTAMINATION SOURCE.

EPA RESPONSE: A PUBLIC MEETING WAS HELD IN SHELBY ON FEBRUARY 16, 1989. ONLY THREE MEMBERS OF THE LOCAL COMMUNITY ATTENDED. ALL THE FEASIBLE REMEDIAL ALTERNATIVES WERE PRESENTED, AND THE AGENCY PRESENTED A PREFERRED ALTERNATIVE. THESE RESIDENTS HAD ONLY THREE QUESTIONS AND APPEARED TO BE SATISFIED BY THE ANSWERS GIVEN BY THE AGENCY. NO WRITTEN OR VERBAL COMMENTS WERE SUBMITTED BY ANYONE BUT THE COMPANY. THE AGENCY, THEREFORE, FEELS THAT THE PUBLIC HAS NO OBJECTION TO THE ON-SITE INCINERATION ALTERNATIVE. THE AGENCY WILL, HOWEVER, MAKE EVERY EFFORT TO MINIMIZE ANY POTENTIAL NUISANCE OR IMPACT TO THE LOCAL COMMUNITY.

4. EFFICIENCY AND EFFECTIVENESS OF COMMERCIAL DISPOSAL FACILITIES: COMMERCIAL RCRA INCINERATORS BLEND A VARIETY OF WASTE MATERIALS ALONG WITH SUPPLEMENTARY FUELS TO ASSURE A CONSISTENT FEED TO THE UNIT. WITH A MOBILE INCINERATOR, THE INCOMING WASTES WOULD BE EXPECTED TO BE MUCH MORE VARIABLE, PARTICULARLY WHEN BURNING GRU/DIRT MIXTURES, THUS REQUIRING MUCH GREATER EXPERTISE AND ATTENTION TO ACHIEVE THE REQUIRED DESTRUCTION EFFICIENCY. ALSO, OFF-SITE RCRA INCINERATION FACILITIES ARE READILY AVAILABLE AND SOUTH CAROLINA'S EXECUTIVE ORDER 89-03 DOES NOT APPLY TO IN-STATE INCINERATION FACILITIES.

SOURCE REMOVAL TO A SECURE LANDFILL ASSURES THAT THE SHELBY SITE GROUNDWATER WILL BE PROTECTED FROM ANY POSSIBLE FURTHER DEGRADATION, AND THAT THE PROPERTY CAN BE UTILIZED WITHOUT FUTURE RESTRICTION ONCE REMEDIATION IS COMPLETE. RCRA LANDFILLS ARE FULLY EQUIPPED WITH DOUBLE LINERS, DOUBLE LEACHATE COLLECTION AND GROUNDWATER MONITORING SYSTEMS, TO ASSURE LONG-TERM PROTECTION OF THE GROUNDWATER. THESE FACILITIES ALSO HAVE DEED RESTRICTIONS WHICH PREVENT FUTURE USE OF THE LAND THAT WOULD COMPROMISE THE INTEGRITY OF THE CONTAINMENT.

ALTHOUGH ENCAPSULATION SHOULD CHEMICALLY BIND ALL HAZARDOUS CONSTITUENTS IN THE SOILS AND RESIDUALS, THERE IS ENOUGH DOUBT TO REQUIRE GROUNDWATER MONITORING OF THE BURIAL AREA INDEFINITELY. MORE IMPORTANTLY, THE PRESENCE OF THE ENCAPSULATED RESIDUALS WOULD NOT ALLOW DEVELOPMENT OF THE PROPERTY IN OR NEAR THE BURIAL AREA, EITHER FOR HOECHST CELANESE EXPANSIONS OR SUBSEQUENT OWNERS, AND WOULD REQUIRE LONG-TERM MAINTENANCE.

EPA RESPONSE: COMPANIES CONTRACTING TO PROVIDE MOBILE INCINERATORS PROVIDE THE NECESSARY EXPERIENCED AND PROPERLY TRAINED PERSONNEL TO ASSURE PROPER OPERATION OF THE EQUIPMENT.

THE SHELBY SITE GROUNDWATER WILL BE PROTECTED IF ANY REMEDIAL ACTION OTHER THAN THE NO ACTION ALTERNATIVE IS CHOSEN. ADDITIONALLY, DISPOSAL OF CONTAMINATED MATERIALS AT A RCRA SUBTITLE C FACILITY IS CONSIDERED LESS THAN PERMANENT, SINCE FACILITY CONTAINMENT STRUCTURES ARE SUBJECT TO FAILURE.

MINIMAL DELAY CAUSING VARIABLES: IN ADDITION TO TIME DELAYING RCRA REQUIREMENTS ASSOCIATED WITH AN ON-SITE INCINERATOR IDENTIFIED EARLIER, THERE ARE OTHER DELAY CAUSING VARIABLES ASSOCIATED WITH ON-SITE REMEDIATION. THESE INCLUDE MORE EXTENSIVE MONITORING AND ANALYTICAL PROGRAMS AND THE DEVELOPMENT OF MORE ELABORATE OPERATIONAL, HEALTH AND SAFETY, CONTINGENCY, AND CLOSURE PLANS SPECIFIC TO ON-SITE REMEDIATION THAN WOULD BE REQUIRED FOR SOURCE REMOVAL ONLY. THE PROCUREMENT OF AN AIR PERMIT AND PETITION TO DELIST THE BY-PRODUCTS FROM THE INCINERATOR IS ANTICIPATED TO TAKE AT LEAST 4 MONTHS. THERE ARE ALSO MANY UNDEFINED CONSTRUCTION ACTIVITIES SUCH AS UTILITIES SUPPLIES FOR THE OPERATION OF AN INCINERATOR AND WATER TREATMENT OF INCINERATOR SCRUBBER EFFLUENT. (THE GROUNDWATER TREATMENT SYSTEM HAS NOT BEEN DESIGNED TO HANDLE THIS ADDITIONAL LOAD.) IN ADDITION, LONG-TERM SURFACE WATER HANDLING AND UNFORESEEN MAINTENANCE PROBLEMS COULD GREATLY DELAY OPERATIONS.

ON-SITE REMEDIATION WOULD ALSO BE A GREATER DISRUPTION TO UNRELATED ROUTINE OPERATIONS AT THE PLANT.

EPA RESPONSE: ANY POTENTIAL "DELAY CAUSING VARIABLES" SHOULD BE ANTICIPATED IN THE DESIGN AND THEIR POSSIBLE IMPACTS ON THE SCHEDULE MINIMIZED. CAREFUL AND THOROUGH PLANNING SHOULD REDUCE ANY POTENTIAL DELAYS. DELAYS DUE TO "UNDEFINED CONSTRUCTION ACTIVITIES" OR "DISRUPTION(S) TO UNRELATED ROUTINE OPERATIONS AT THE PLANT" WOULD HAVE TO BE MORE CLEARLY DEFINED IN ORDER TO DETERMINE WHAT IMPACT IF ANY THEY WOULD HAVE ON THE PROJECT SCHEDULE.

6. ECONOMICS: ATTACHMENTS TO THE LETTER SUMMARIZE THE BUDGETARY ESTIMATES RECEIVED TO-DATE CONCERNING OFF-SITE INCINERATION OF THE GRU/DIRT MATERIAL WITH OFF-SITE LANDFILL DISPOSAL OF RESIDUALS, AND CONCERNING ON-SITE INCINERATION WITH CHEMICAL FIXATION OF RESIDUALS AND ASH. ATTACHED TO EACH SUMMARY IS THE VENDOR'S PROPOSAL. THE FOLLOWING IS A SUMMARY OF THE REMEDIAL ACTION COSTS:

VENDORLOCATIONCOST IN $1000'S

GSX SERVICES, INC. OFF-SITE750 (TURN-KEY)
CHEMICAL WASTE MANAGEMENT ON-SITE 1,630 (1)
CHEMICAL WASTE MANAGEMENT OFF-SITE1,546 (TURN-KEY)
ENSCO ON-SITE 5,170 (1 AND 2)
ENSCO OFF-SITE3,132 (2)
THERMALKEM OFF-SITE1,800 (2)

1-DOES NOT INCLUDE HOECHST CELANESE'S ADDITIONAL COSTS OF $500,000 TO $750,000 TO ACCOMMODATE ON-SITE REMEDIATION ACTIVITIES OVER AND ABOVE OFF-SITE.

2-DOES NOT INCLUDE REMEDIATION OF NON-GRU MATERIALS OR SITE EXCAVATION ACTIVITIES.

BASED ON THESE BUDGETARY ESTIMATES, SIGNIFICANT COST SAVINGS CAN BE REALIZED THROUGH OFF-SITE DISPOSAL USING GSX OR CHEMICAL WASTE MANAGEMENT. REFERENCE THE ATTACHMENTS FOR DETAILS OF THE REMEDIAL APPROACH OF EACH VENDOR.

EPA RESPONSE: NONE OF THE ESTIMATES PROVIDED THE AGENCY SUBSEQUENT THE DRAFT FEASIBILITY STUDY REPORT CONTAIN ENOUGH DETAIL TO BE CONSIDERED AS VALID ESTIMATES. THE DRAFT FEASIBILITY STUDY REPORT OFFERED DETAILED COST ESTIMATES FOR EACH ALTERNATIVE (APPENDIX IX OF THE FEASIBILITY STUDY REPORT). ESTIMATES PROVIDED BY HOECHST CELANESE SINCE THE DRAFT FEASIBILITY STUDY REPORT WAS SUBMITTED HAVE BEEN VAGUE, USUALLY APPEARING AS LETTERS TO THE COMPANY WITH LITTLE OR NO DETAIL AS TO HOW THE ESTIMATES WERE DEVELOPED.

CLARIFICATION OF THE $500,000 TO $750,000 REQUIRED BY THE COMPANY TO "ACCOMMODATE" ON-SITE REMEDIATION HAS NOT BEEN RECEIVED. THIS ACCOMMODATION EXPENSE IS PROVIDED WITH NO SUPPORTING DOCUMENTATION AND THEREFORE MUST BE DISREGARDED AS UNSUBSTANTIATED.

7. CONCLUSION: THE TWO REMEDIAL ALTERNATIVES PRESENTED IN THE FS REPORT THAT APPEARED MOST ATTRACTIVE WERE ON-SITE INCINERATION WITH ON-SITE FIXATION, AND OFF-SITE INCINERATION WITH OFF-SITE LANDFILL DISPOSAL OF THE SOILS AND SEDIMENTS. AFTER CLOSER EVALUATION OF THESE ALTERNATIVES, HOECHST CELANESE RECOMMENDS OFF-SITE INCINERATION OF THE GRU MATERIALS AND OFF-SITE LANDFILL DISPOSAL OF THE CONTAMINATED SOILS AND SEDIMENTS AS THE PREFERRED ALTERNATIVE. THE MAJOR BENEFITS OF THIS APPROACH, AS OUTLINED IN THE PRECEDING DISCUSSION, ARE BELIEVED TO BE OF CONSIDERABLE ADVANTAGE OVER ON-SITE REMEDIATION.

EPA RESPONSE: THE AGENCY'S EVALUATION OF ALL THE ALTERNATIVES AS PRESENTED IN THE DRAFT FEASIBILITY STUDY REPORT DEVELOPED BY S&ME, INC., FOR HOECHST CELANESE, RESULTED IN THE SELECTION OF THE ALTERNATIVE PRESENTED IN THE ROD. THE INFORMATION SUBMITTED BY HOECHST CELANESE DURING THE PUBLIC COMMENT PERIOD HAS BEEN CONSIDERED; HOWEVER, NO NEW USABLE INFORMATION WAS SUBMITTED, THEREFORE THE AGENCY'S PREFERRED ALTERNATIVE REMAINS ON-SITE INCINERATION WITH SOLIDIFICATION OF THE INCINERATOR ASH, BURN PIT RESIDUALS AND POLYESTER CHIP.

IV. REMAINING CONCERNS

THE ONLY REMAINING CONCERN AT THE SITE IS THAT THE INCINERATION BE CONDUCTED IN A SAFE MANNER. IN ADDITION, THE HOECHST CELANESE COMPANY PREFERS TO HAVE THE INCINERATION OCCUR OFF-SITE.